

PUBLIC  
BATHS  
AND  
WASH-HOUSES

R. OWEN ALLSOP.



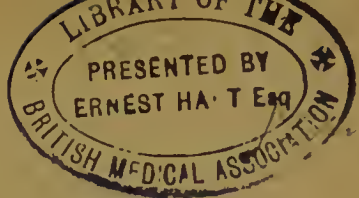


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# PUBLIC BATHS

AND

## WASH-HOUSES

BY

ROBERT OWEN ALLSOP

ARCHITECT

AUTHOR OF 'THE TURKISH BATH: ITS DESIGN AND CONSTRUCTION,' AND 'THE  
HYDROPATHIC ESTABLISHMENT AND ITS BATHS'

*ILLUSTRATED WITH PLANS AND SECTIONS*



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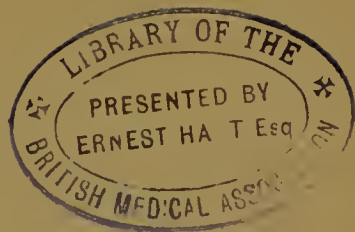
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## PREFACE.

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IN publishing a work dealing in a systematic manner with the many problems pertaining to the design, construction and equipment of public baths and wash-houses, the object of the author has been not only to afford information of practical value to the architectural profession, but to endeavour to suggest such future improvements and modifications in existing arrangements as may command the attention of Baths Commissioners, and others actively interested in the promotion of cleanliness among the masses. It is hoped that the publication of matter relating to baths and wash-houses may, in however small a way, promote the building of more bathing establishments. The public baths movement has abundant and vigorous life, and is gathering strength year by year; but further ventilation of the subject, in such measure as may be possible by means of a small technical treatise, may prove a wholesome stimulus to the enterprise of such authorities as have the initiation and inauguration of bath-building schemes. Much has been accomplished since the passing of the Baths and Wash-houses Act. Much—very much—remains to be done.

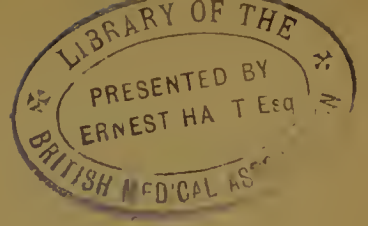
The present work, like its predecessors, originally

appeared as a series of illustrated articles in the *Building News*. It has been carefully revised, and a plan and sections of a complete public bath-house have been added to the illustrations. In treating the subject, the author has had in view three broad divisions:—(1) the bath-house; (2) the wash-house; and (3) the engineering and water-fitting department. First, therefore, the bathing department, with its slipper-baths, swimming-baths, vapour and shower-baths, has been considered; then the wash-house and laundry, with the washing appliances, drying arrangements and ironing and mangling-rooms; and lastly the engineer's and water-fitter's department, with the question of water supply, tanks and fittings, boilers, engines and machinery, and the heating of swimming-baths—subjects so frequently neglected by the architect. The practical consideration of the provision of hot-air baths, and the problem of providing cheaper warm baths for the poor have been considered in special chapters.

37 NORFOLK STREET, STRAND:

*February 1894.*





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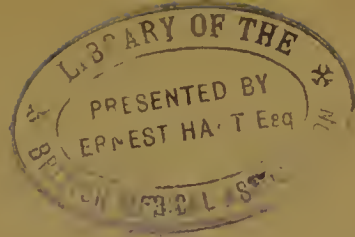
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# PUBLIC BATHS AND WASH-HOUSES.



## CHAPTER I.

### INTRODUCTION.

THE importance of the subject of public baths and wash-houses cannot be over-estimated, either on the grounds of public well-being or of political economy. Regarded as features in present-day life, the public bath is an instrument of the most powerful order for elevating the masses and stimulating a desire for self-improvement. To make an habitually dirty man clean, is to create in his inmost soul—even if but temporarily—a desire to rise out of the squalor and filth with which he may be ordinarily encompassed. It is only the true public bath that can be made serviceable to this end. The houses of the poor have not, and cannot well have, the benefits of properly-fitted baths; and although it is now usual to find the homes of the lower middle-class provided with excellent bathing arrangements, the rank and file of the working classes have none. It is this vast mass of humanity that can only be reached by inducements held out by the cheap baths of public bathing



establishments; and it is our poorer brethren that the framers of the Baths and Wash-houses Act had principally in mind, or they would not have set such narrow bounds on the charges for the baths and washing conveniences.

It must be a most gratifying sight to all who have at heart the welfare of the poor to see a hundred or more women at work in a well-appointed public laundry; for here in a few hours they can do a week's washing and drying, saving all the discomfort and misery of "washing day" at home. And the hard-headed economist will be reassured to learn that at all existing establishments the washing department has been found an unqualified success, superintendents, at most places, telling the visitor that they could well occupy further washing-stalls, the wash-house being frequently crowded to excess.

Much that is interesting, and not wholly uninteresting practically, will be found in the history of the public baths and wash-houses movement in this country. Information upon this point will be found in a pamphlet by Messrs. Ashpitel and Whichcord, published shortly after the passing of the Act, and in a book entitled 'Sanitas Sanitatum et Omnia Sanitas,' by Mr. Richard Metcalfe, the hydropathist. The first\* public baths and wash-houses in this country were erected at Liverpool,

\* I do not include early and spasmodic attempts to establish public baths. Perhaps the very earliest attempt in this direction was when, about the last quarter of the 17th century, the Duke of York provided in London a certain public bath called "The Duke of York's Bagnio." Medals or tokens, bearing the figure of a man for men's baths and a woman for women's baths, with the respective days of admission, were issued. These tokens are now extremely rare.

where the St. George's Pier Head Baths were opened in 1828. In 1849 the Corporation of Liverpool increased their bathing and washing accommodation, and erected two new establishments—one in Paul Street, and the other in Cornwallis Street. As with all innovations and reforms, the early progress of the movement in London was slow. In September 1844, the Lord Mayor convened a meeting for the formation of an "Association for Promoting Cleanliness among the People," which resulted in the establishment of one of the first baths and wash-houses in London—a building in Glasshouse Yard, near the London Docks. Such was the success of this establishment that its promoters erected a larger set of baths and wash-houses at Goulston Square, Whitechapel. The hopes raised by the first success, however, were not sustained, and the second establishment gradually fell into decay, and was closed until taken over by the Vestry of Whitechapel.

In 1846, chiefly owing to Sir C. Scudamore's efforts, another establishment of this kind was erected by a private association in George Street, Euston Square, the water being gratuitously supplied by the New River Company. This was a successful undertaking, and in addition to its baths and washing conveniences had a department for "cleansing, purifying and disinfecting the dwellings of the poor," which effected much good; but the New River Company abolishing their reservoir, the establishment had to be closed. It is thus evident from even this slight sketch that public baths and wash-houses would not flourish under semi-philanthropic or private enterprise. Public measures were required. In

1835, Mr. J. Silk Buckingham introduced a Bill into the House of Commons, but, owing to opposition, failed to get the measure passed. In 1846, on the 8th of June, the Bishop of London presented five petitions on the subject to the House of Lords, praying for increased facilities for cleanliness available for the masses, and on the 19th of the same month, Sir G. Grey introduced a Bill, which received the Royal assent on the 26th of August, 1846.

Thus the Baths and Wash-houses Act, whereby any vestry and borough may, under stated conditions, provide suitable establishments, came into operation, and put in movement a powerful lever for humanising the physically, mentally and morally debased. The Act has been amended at various times, and is procurable in four sections, the original Act, and the amendments of succeeding years. All who have to do with designing these establishments would do well to make themselves familiar with the provisions of the Act and its amendments, although there is little contained in any of the clauses that actually affects the plans of the architect; and, there being no central authority corresponding to, say, the Education Department for board-school building, no rules and regulations have been drafted for architects' guidance. There is, however, one section of the Act that governs practical planning, i.e. the one relating to the proportion of cheap baths to those of a higher price, and the architect should also be acquainted with the provisions of the schedule of prices to be charged, and its amendments.

## CHAPTER II.

## SCHEDULE OF ACCOMMODATION.

THE baths authorised to be provided by the Act, as amended, are :—Swimming-baths, warm slipper-baths, cold slipper-baths, vapour-baths, and warm and cold shower-baths. The “hot-air” bath\* is not mentioned in the Act. At the time of the drafting of the original Bill, the vapour-bath was more generally known than the Turkish bath, and the promoters of the Bill appear in consequence to have naturally incorporated the former. Being, however, inferior both as a cleansing and sudorific expedient, it is much to be hoped that some day the hot-air bath, at a low price, may be substituted for, or added to, the vapour-bath.

The object of the Public Baths and Wash-houses Act is to promote health among the people by means of cleanliness. The most effective means should therefore be employed. As at present arranged, the value

\* I hesitate to employ the designation “Turkish bath,” because to do so seems immediately to create in many minds the idea of a luxury pure and simple—the coffee and cigars, apparently, being more obvious than the cleaned skin. Yet if the Turkish bath be simply a sybaritic luxury, a change of linen is equally as epicurean. Accordingly, some might argue, a clean shirt is as superfluous as a clean skin.

of the several baths, as cleansing agents, included under the Act may be stated as follows :—

1. Vapour-bath.
2. Warm slipper-bath.
3. Warm shower-bath.
4. Cold slipper-bath.
5. Swimming-bath.
6. Cold shower-bath.

The warm slipper-bath is the most generally useful of this list, the vapour-bath being little used, unappreciated, and apparently unpopular. People who use the cold slipper-bath for cleansing purposes—as distinct from a refreshing tonic, as in hot weather—can really get very little cleansing. The cleansing value of such baths, and the swimming-bath and shower-bath, is to be found not so much in the immersion in the water as in the subsequent vigorous towelling. In a pamphlet just issued \* on the progress and position of the Corporation Baths and Wash-houses at Glasgow, there occur some very pertinent, if unconscious, remarks bearing on this point. Referring to the discoloration of the water in the swimming-bath, caused by the clayey matter held in suspension in Loch Katrine, Councillor Walter Wilson, the author, says that while the foreign matter in the water is popularly believed to come off the skin of the bathers, “even if chimney-sweeps or others direct from their work were allowed to enter, they would be almost as black when they left the water as when they entered it, *the oily skin having a greater affinity than the*

\* 1892.



*water for what may be called skin-dirt."* I have italicised the last few words because they should, I think, cause thoughtful readers to reflect a little upon the principles adopted in our public baths, so far as concerns the desired end of cleanliness of person.

Practically the only cleansing baths in the schedule of the Baths and Wash-houses Act are the warm slipper-baths. The swimming-bath is a species of *gymnastic exercise* with a certain slight cleansing power. It would be much more reasonable to say of the swimming-bath that it is a mere luxury, and that cleansing of the body could be far better accomplished by ordinary warm baths, than to cast reflection on the hot-air bath.

When the Paddington public baths and wash-houses were about to be erected, application was made to the Local Government Board to ascertain the legality, or otherwise, of including the Turkish bath in the proposed establishment, and the reply of the Board was to the effect that, although the statutes contained no definition of baths, "the schedule to the statutes 10 and 11 Vict. cap. 61 recognises a vapour-bath, and the Board therefore apprehend that there would be no legal objection to the establishment of a Turkish bath." As this was some nineteen years ago, it is to be supposed that not the law but those who carry it into effect have so often prevented the addition of the hot-air bath.

From a financial point of view, the swimming-bath is found to be a gratifying success, and it is therefore impossible and undesirable to unfavourably criticise it on the score of its small value as a cleansing bath.

Moreover, swimming being an excellent form of athletic exercise, arrangements to encourage the use of such baths are in every way worthy of commendation; and yet another point in favour of the swimming-bath is that its existence doubtless leads many to bathe occasionally who would otherwise seldom or never wash themselves in any way. Unfortunately, the attendance at swimming-baths falls off regularly at all establishments towards the winter months. In the Glasgow pamphlet, alluded to above, is a table showing how exactly the variation of such attendance coincides with the rise and fall of temperatures throughout the seasons. For this reason, most of the London establishments close their swimming-baths at the end of October, or thereabouts—or, at least, they close the larger baths, and use throughout the winter months only one of the smaller swimming-basins. For this reason, also, it is often arranged that the large swimming-bath hall shall be convertible into a place for entertainments, &c., during the winter months, and the architect is frequently called upon to make provision for this conversion.

The question of *class* naturally requires consideration at an early stage. Much in this way depends upon the place and position, and the neighbourhood where the baths are erected. In the amendment of the Act of May 27, 1878, the schedule definitely provides for *three* classes of swimming-baths, at sums not exceeding eightpence, fourpence and twopence for each person. In London parishes three classes are seldom required, two being found sufficient. In the department of slipper-baths the Act limits the charges of the lowest class baths,

and refers but vaguely to "baths of any higher class" as the Commissioners may think fit, the charges not to exceed, in any case, three times the amounts charged for the lowest class. Two classes of slipper-baths are found sufficient.

In the wash-house department, the amendment of the 2nd of July, 1847, provides for "wash-houses of any higher class" (than the lowest) "at such charges as the Council and the Commissioners think fit." In practice, only one class is required.

In distributing the various classes great care and forethought, and some experience, are required, especially when the exigencies of the site are opposed to any easy solution of the problem. Badly arranged entrances and an unskilful disposition of the various departments, so far as regards the classes, may militate much against the success of the institution.

Vapour-baths have, in the past, been supplied by the old-fashioned vapour-box ; but it is only here and there that we find even this simple sudatory expedient provided. In many establishments the vapour-bath is entirely ignored. Yet in the schedule attached to the amendment of the Act dated July 2, 1847, vapour-baths are specifically mentioned, and the charge fixed at a similar rate to that for warm baths.

It will thus be seen that, in the majority of instances, the public baths of this country afford no means of sudation to the bathers who frequent them. In most of the public baths of Germany we find complete hot-air and vapour-baths provided. Pending the general introduction of the Turkish bath in the public bath-houses of this

country, it should be the least endeavour of Baths Commissioners to provide the ordinary vapour-box in as complete a manner as possible. It should be placed in a room or chamber fitted with warm and cold sprays, so that after the sweating process the bather may have the necessary cleansing and toning warm and cold ablutions.

Every department should possess a vapour-box in default of any more complete sudatory appliances. Both first and second-class bathers should have a bath of this kind available for their use. The Act expressly allows this, and consequently it is the duty of Commissioners to see that such baths are provided. No great amount of space is required; an area equal to less than two of the private bath enclosures would suffice. The room should be lined throughout with glazed ware, and have a drained, tiled floor; the vapour-box, properly connected with the steam supply, would stand in one corner, and on another side of the room would be appliances for giving warm and cold sprays. Two dressing-places should be connected with the room, which, in effect, would be a kind of douche-room. Nothing in such an arrangement would overstep the bounds of the Act of Parliament, for the carrying out of the idea would be the natural result of properly construing its stipulations, which, as it is, are so frequently ignored.

Section xxxvi. of the Act stipulates that the number of baths for the labouring classes in public baths and wash-houses shall not be less than twice the number of baths of any higher class, if but one, or of all the baths of any higher classes if more than

one, in the same building. And section v. of the Amendment of July 2, 1847, makes similar provisions with regard to washing-tubs—viz. that the number of washing-tubs or troughs for the labouring classes shall not be less than twice the number of the washing-tubs or troughs of any higher class, if but one, or of all the higher classes if more than one.

We do not find that, as regards the proportion of first and second-class baths, the stipulations of the Act are generally observed. In buildings recently erected the proportion of baths is not in accordance with the provisions of the Act. Commissioners, apparently, have taken the matter into their own hands; but their action is possibly illegal. It may be that at times a different proportion of baths is better suited to the neighbourhood; but section xxxvi. of the original Act is a wise measure calculated to prevent abuses, and to protect the interests of the classes for whose benefit the Act was brought into existence. As regards the proportion of washing-tubs of several classes, there being usually only one class and charge for the use of the public laundries, section v. of the Amendment of 1847 calls for no comment.

Altogether the arrangements for any baths, except swimming and slipper-baths, hitherto made in our public bathing establishments are of a very rough-and-ready description. Fine swimming-baths are provided, and the slipper-bath arrangements are usually complete; but should the bather have a mind for a vapour-bath or a hot or cold shower, the only preparations made—and that only in a few out of the many bath-houses



—are of the most meagre description. There is the shower, truly, but it is only a rose inconveniently fixed above a slipper-bath ; and here, perhaps, is the vapour-box, but so cramped in the narrow space of an ordinary slipper bath-room that it cannot be effectively worked.

All points to the need for a proper douche-room in the public bath-house—a chamber where the vapour-box may be placed and good shower-baths fixed.\* It is impossible to study the Baths and Wash-houses Act and its amendments without feeling that the present accommodation afforded in the average establishment is not in the true spirit of the Act. Swimming-baths are made much of by Commissioners ; but as a matter of fact it was not until an amendment of a date as late as 1878 that provision was made for swimming-baths ; while less than a year after the passing of the original Act, warm and cold shower-baths and vapour-baths were added to the original schedule of prices of ordinary warm and cold baths.

Possibly it has been found that vapour-baths are not in any great demand in public bath-houses. To this I would reply, that if sudatory baths were more complete and attractive they would surely become more popular. It is something of a duty on the part of the State to educate the poor in this matter. It is quite comprehensible that the vapour-bath is not so popular as the hot-air bath. The former is far inferior as a

\* For plans and descriptions of douche-rooms, see ‘The Hydropathic Establishment and its Baths.’

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bathing appliance, and the latter is infinitely more pleasant. Every experience of the past has shown that the hot-air bath provided cheaply for the people rapidly becomes popular ; but the hot-air bath is not mentioned in the Act, and I therefore plead for the only sudorific expedient included therein—viz. the vapour-bath.

## CHAPTER III.

GENERAL ARRANGEMENT OF BATHS AND  
WASH-HOUSES.

THE position of the site, and nature of the immediate neighbourhood, has, or should have, much to do with the scope and style of the public baths establishment. It is evident that a bath-house suited to a district wholly inhabited by a poor class of residents will not prove suitable in a place where there is a considerable proportion of comparatively well-to-do people. Baths Commissioners should more thoroughly study this question of site and surroundings. A grand swimming-bath, for example, is not required in a poor community. For such a neighbourhood a large portion of the site may safely be devoted to the wash-house ; it being found that, where there are many poor persons in the locality, the public laundry is always well patronised. In a wealthier neighbourhood the wash-house is but little needed. The first-class swimming-bath, on the other hand, will be freely used ; and as the price authorised to be charged warrants some little expenditure on the comfort and appearance of the bath, it may be built with some pretension to architectural effect.

In the general scheming of the plan of a public bath-

house the swimming-baths will be found to be the chief governing factor. Their size renders them dominant features. Their position being decided a key is formed to the remainder of the plan. This, broadly speaking, consists of the various corridors and blocks of slipper-baths, together with the offices, waiting-rooms and other necessary features. Having determined in which position, with regard to the site, the axes of the swimming-baths will best be placed, it must be ascertained that such an arrangement will conduce to convenient methods of approach and an economical and suitable placing of the entrance halls, pay-offices, waiting-rooms, &c. The latter may be of no great moment, but every importance should be attached to the methods of approach and the position of the pay-offices. The first aim should be to concentrate as much as possible, to bring as many bathers as may properly be brought in at the same entrance door, so that there may be a minimum of attendance required in the way of ticket-giving.

Two principles may be followed in this matter. Firstly, the classes may be grouped, and the men and women bathers enter at or near the same point ; and, secondly, the male and female bathers can be provided with separate and distinct entrances, both classes of men entering one door, and the women by another entrance. Baths have been erected on both principles ; but a modification of the second is the most to be recommended. The separation of the entrance for the sexes is a desirable thing in all bath-houses ; though, for the matter of that, no less desirable is the separation of the classes. It has been found by experience that many of the

poorer bathers do not care to enter at such an imposing entrance as is sometimes provided for first-class bathers ; and anything that will deter the poor from availing themselves of the baths is to be avoided.

A women's entrance and a men's entrance has been found to be the most practicable arrangement. One central pay-box will control both men and women bathers. On one side of the pay-office will be the entrance for men, and on the other side the entrance for women.

The laundry entrance is, as a rule, better kept distinct from the other entrances. It may, for the sake of economy, be identical with the entrance to the women's second-class baths ; but, if possible, it should be separate, as there is so much work occasioned by this department that one clerk's time is required to control the coming and going of the washers.

Site has much to do with the question of entrances. A side street for second-class entrances, and for access to laundry and to boilers, &c., is a very great gain. Commissioners searching for sites might well bear this in mind.

Where, as so often has occurred in London, a narrow cramped site is the only one available, much skill is required to make the entrances convenient. In this case the whole of the bathers' entrances will certainly have to be grouped into one, men entering on the one hand of the pay-office and women on the other, while stokers, engineers, &c., may have to make their way through the laundry entrance.

It is a common practice to place the first-class



swimming-bath so that it may be entered directly from the hall or vestibule. By this means direct access is gained to one of the busiest departments of the establishment, and provision is made for times when the swimming-bath hall is used for the purposes of entertainment, or when swimming *fêtes* are held.

Adjoining the first-class entrance, waiting-rooms will be needed, if they can be conveniently placed in this position on the plan. The waiting-rooms are required for the slipper-baths, and should therefore be placed in convenient relation to these departments, or the corridors leading thereto. The second-class waiting-rooms will adjoin their respective suites of baths.

Near the vestibule should be the superintendent's office. The living apartments of this official are, as a rule, conveniently placed over the entrances, offices, waiting-rooms, &c., in front of the higher-pitched bath-halls, thus giving height and dignity to the front elevation of the baths.

It will be scarcely necessary to go into much detail regarding the superintendent's residence, &c. A comfortable suite of seven or eight rooms is now provided for this purpose, preferably located over the main entrance to baths, so that they may have as good an outlook as possible and be conveniently near to the superintendent's office.

In the front block of the building is also required a board-room for meetings of the Baths Commissioners, and in connection with this a clerk's room, a waiting-room and lavatory.

All bath-houses are best planned all on one floor.

Some of the London establishments afford examples of baths on a first-floor. In this matter, again, site may necessitate such a contrivance as a first-floor set of baths in order to gain the requisite amount of accommodation on a given area; but the arrangement is to be avoided, if possible. Commissioners appreciating the national importance of public bath-houses will, even at some increased cost, endeavour to secure sites of such area that all the baths may be on one level.

The boiler-house must necessarily be planned in a basement, in connection with the engines, machinery, furnaces of drying closets, engineer's shop, and coal and coke stores. In deciding the position for the engineering department, the aim should be to select some part of the plan where the noise, heated atmosphere, dust and other accompaniments of engines, &c., may not be a nuisance either to the establishment or to neighbours; and also where a chimney-shaft can be conveniently constructed. Except in very exceptional cases, nothing will be constructed under the swimming-baths. The boilers, &c., will therefore be placed under some other part of the establishment—e.g. the laundry and its necessary adjoining apartments. At times it may be absolutely necessary to gain room under a swimming-bath. In such a case the bath must be constructed like a tank, of riveted iron plates supported on columns, or of brick-in-cement rings on iron joists and brick piers, care being taken that a watertight lining is provided.

If more than one swimming-bath be required, and no

sacrifice of convenience in working results, it is evidently a saving to group both bath-halls together, so that where one wall is carried up to receive the roof of one bath, it may serve also to carry the adjoining roof. For purposes of ventilation, however—as will be evident upon examining any sectional view of a public bath-house—it is better to put a low building, such as a slipper-bath room, between two swimming-baths. Each swimming-bath should be completely cut off from others by solid brick walls. The objections to the reverse arrangement will be readily perceived on examining any example, such as that afforded by the out-of-date baths at Endell Street, Bloomsbury, and the otherwise excellent and compact public baths at Richmond ; while many of the older establishments exhibit equally unfortunate arrangements. Not to mention other objections, the second-class bathers, comprising, as a rule, many noisy boys, do not conduce to the enjoyment of those in the first-class bath.

In well-planned baths and wash-houses there should be a good division of departments, and a compact grouping of classes ; corridors should be broad and entrances spacious. The access to swimming-baths, particularly to the first-class bath, should be as direct as possible, and if the hall is required for entertainments in the winter, spare exits, in accordance with municipal regulations, must be arranged. There should be an endeavour to render the work of supervision of baths as easy as possible, and the entrances and pay-offices should be so arranged as to economise attendance while not sacrificing the due consideration of classes and

sexes. As to classes, if two only suffice all purposes, it is far better than three. A first-class swimming-bath at a charge of 6*d.*, and a second-class bath at 2*d.*, answer all purposes. The first-class baths should be large, and all baths should be light and well ventilated. There should be space everywhere for pipes and no burying of pipes underground and out of the way, where much trouble, expense and annoyance are occasioned by efforts to reach them for repairs or alterations.

The plan and sections given at the end of this work represent an establishment suitable for a populous district in a large town. No public wash-house is shown, but a plan of a complete wash-house is given in Chapter VI., facing p. 46. The plan of the engineer's department, given on p. 59, is that belonging to this design. It will be seen to form the basement of the left-hand portion of the plan. The accommodation included in the plan is just that which is ordinarily required in a thickly populated London suburb, possessing a large number of lower middle-class residents, yet having sufficient inhabitants in more easy circumstances to render a large, well-appointed first-class swimming-bath necessary, and to make it probable that a ladies' swimming-bath will be a success. Had the neighbourhood been inhabited by a large number of poor persons, a public wash-house—here left out—would have been a first necessity. Where it is probable that a wash-house will be required Commissioners will always do well to reserve a space—in a convenient position—so that a public laundry may be provided at some future time.

In inaugurating a new scheme for baths, Commis-

sioners should more carefully study the nature of the accommodation required, *especially in so far as concerns the size and number of the various baths*. It is a pity that so many establishments are erected without regard to the wants of the neighbourhood. A precise knowledge of the most suitable size for an establishment, the number of baths, the water area of the swimming-baths and the number of washing-tubs to be provided in the wash-house can only be acquired by Commissioners after a series of visits to various establishments, consultations with experienced superintendents, and a comparative analysis of neighbourhoods. Having determined that there must be so many slipper-baths of various kinds, and that so many swimming-baths are desirable, then the *size* of the swimming-baths must be determined, since if the site has been tentatively selected it is important to roughly ascertain that the accommodation can be easily placed upon the ground. The plans for new baths and wash-houses are frequently placed out to competition among architects ; and seeing the extent to which architectural competitions are carried—in point of elaborateness and completeness of the drawings submitted by the several competitors—it is the evident duty of Commissioners to take every care to lighten as far as possible the arduous task of the competing architects. This desirable end will be accomplished by giving a fully detailed account of what is required, both as to kind, number and size, and, while not going into details best left entirely to the architect, yet avoiding vagueness of meaning and intention. The neglect of Commissioners in this respect has at times amounted to a scandal.



It is especially important to the architect to know definitely the size of the swimming-baths required, and precise instructions on this head greatly facilitate the task of the competitors. In the general plan included at the end of this work the sizes of the swimming-baths are good and liberal :—1st-class men's bath, water area 120 feet by 40 feet ; 2nd-class men's bath, 90 feet by 35 feet ; and the women's bath 80 feet by 30 feet. These sizes have been exceeded in London—as regards, at any rate, 1st-class men's baths—but Commissioners will often have to be content with smaller water areas. In setting out the plan of a bath-house the sizes of the swimming-baths govern the disposition of the whole plan. Often there is but one way in which three baths can be conveniently arranged upon a given site—a fact that accounts for the curious resemblance sometimes found in the ground plans of a set of architects' competitive designs. The importance of stating definitely the sizes required is therefore evident : the architect then knows that he is so far correct, and is rid to some extent of one of the most harassing cares attending competitions—the uncertainty as to whether or no one is meeting the views of the Commissioners in important points affecting the whole plan.

As before stated, a plan with the bath accommodation all on the ground floor is, in the great majority of cases, vastly superior—in point of the working routine of the establishment—to all other methods of arrangement. In selecting a plan, however, care must be taken to ascertain that in endeavouring to place everything on one floor the designer has not made sacrifices of other



important points, or seriously cramped the plan so as to produce a crowded and inconvenient arrangement. Next in importance to a ground-floor arrangement is the provision of ample top-lighting by lanterns and skylights. This, so suitable and desirable for appearance and ventilation in all bathing establishments, should naturally follow from a plan all on one floor, as it will be found that one of the serious objections to superimposed stories of baths is that they rob here a part of a skylight and there a ventilating space from the ground-floor baths.

Too frequently, it is to be feared, draughtsmanship and drawings, detailed with wearisome elaboration, lead the Commissioners astray in the selection of plans. It should be the aim to look past and through this, keeping the attention fixed upon the general arrangement and grouping of departments. A great show of engineering details has been frequently a successful ruse in attracting the attention of Commissioners to a set of plans ; but it should be remembered that this is, in nine cases out of ten, the work of a separate engineer, and will not compensate for bad planning. It may be very good in itself, but will not prevent the plan being bad. Providing that the arrangement of the baths is good, and the drawings indicate the work of the master-hand of an artistic architect and scientific constructor, the engineering arrangements are a subsidiary detail easily planned if necessary by an independent engineer. One thing, however, must be observed, that on the plans and sections the suite of rooms devoted to the engineering department must be scientifically disposed, so that the

boilers may be in the best place for effective working and easy stoking—that the engine, shafting and machinery are in workmanlike positions. The mere display of pipes in the laboured manner latterly in vogue—every joint and flange shown to a microscopic scale—indicates the approach to an anti-climax in the modern system of architectural competitions. Such pipes are seldom correctly shown, and rarely if ever carried out in practice as thus displayed in theory. On the other hand, let it be seen that such engineering work as may be shown on the plans is intelligently drawn, and does not betoken ignorance. No architect competent to plan and build public baths is without a clear and concise understanding of the engineering requirements and the arrangements for water supply.

Corridors should be rigorously reduced to the veriest minimum. Awkward, straggling corridors and passages unfailingly indicate a bad, ill-studied arrangement. Directness of access to the various apartments should be sought for in a plan. Some corridors there must necessarily be in a building where, as in public baths, many different departments are included ; but these should always be curtailed wherever opportunity offers, and planned in as straightforward a manner as possible, so that bathers may at once perceive the proper route to the various baths, and the superintendent and attendants readily preserve order in the building.

Drainage is evidently a most important point. All plans should show a thorough, comprehensive scheme, with every modern device for preventing evils of insanitation. It is especially necessary in laundries to see that

plenty of inspection chambers and open channels are provided for clearing stoppages ; and some sort of grease-separator would often be a desirable addition. In selecting sites for baths, Commissioners should ascertain that the main sewer is sufficiently deep to effectively and quickly drain the swimming-baths, and, if possible, the blowing-off sump in the boiler-house.

The general plan and sections accompanying this work are given as showing an endeavour to adapt an establishment to a difficult site. Planning on an easy, open, roomy piece of ground is a simple matter. More frequently than not the architect has to make the best of very irregular sites in planning public baths. In the plan given at the end of this work an arcade was included, as likely to prove a source of income to the establishment, and as a preferable alternative to providing long corridors in the narrow strip of ground that fronts the main road. A second off-shoot of the main plot is utilised for entrance to stokery and to establishment laundry. Had there been a public wash-house, this would possibly have been planned on the site of the private laundry, the latter being then arranged in the basement. The offices for Commissioners and the residential block for superintendent are placed over the arcaded entrance. Three swimming-baths and the other usual features of a modern establishment are included. No special description will be given of the plans or sections, which will be easily understood by and serve as general references for the reader during the perusal of the several chapters dealing with details.

## CHAPTER IV.

## SLIPPER BATHS.

THE ordinary shallow baths, to which the name "slipper" has been now generally applied, are after the swimming-baths the great mainstay of public bath-houses. Indeed, during the winter they are their chief concern, the cold weather deterring the majority of swimmers. It being a popular idea that to bath properly one must soak like a potato in a complete immersion of hot water, the slipper-bath maintains its hold on the people in spite of the fact that a hot-air chamber and a pint or two of water, with soap to match, affords a more effective method of cleansing the body. The slipper-bath and its dressing chamber are, apparently, features that have long reached perfection; for the baths of the first days of the Baths and Wash-houses Act are practically the baths of the institutions of to-day. The chief difference to be noticed in modern bath-houses is the substitution of heavy porcelain baths for the earlier and objectionable zinc troughs. The generally approved method of placing slipper-baths on the plan is in two rows on either side of a hall and with a central gangway, off which open the doors. The partitions are ordinarily made of enamelled slate, with doors con-

structed of the same material, and neither carried up higher than about 6 feet or 7 feet. Economy of space is usually all-important, or half-brick, glazed-both-face walls, in cement, would make more pleasant-looking divisions than the monotonous slate. Wood is bad, the vapour and water soon destroying such partitions. For this reason the slate doors answer well although heavy, and hence liable to chip if "banged."\*

A cheerful waiting-room at the entering end of slipper-baths should always be provided, and connected with proper conveniences.

The dimensions and arrangements of the slipper-baths and dressing places, and even of the halls wherein they are placed, have become crystallised. There is a gangway, or corridor, varying in width from 3 feet to 4 feet, and each bath-room measures 6 feet by 6 feet 6 inches, or thereabouts, the divisions being 6 feet 6 inches high, and the doors the same height and 2 feet 3 inches wide. The slate partitions are best held in light channel iron, screwed, bolted and bent, or forged, as may be necessary to form the requisite connections. The baths, of porcelain, should be placed, where possible, in pairs, with the partition between, so that plumbing may be concentrated. A wooden top is generally provided. Nothing beats white deal as ordinarily employed, unless it be teak, as fixed at St. George's Baths, Buckingham Palace Road. A

\* I find that there is a decided consensus of opinion among baths superintendents in favour of slate. It has been suggested to me, however, that if  $\frac{1}{8}$  inch clear were left between slate doors and frames, there would not be a tendency to chip at the edges. Some doors fit too closely.

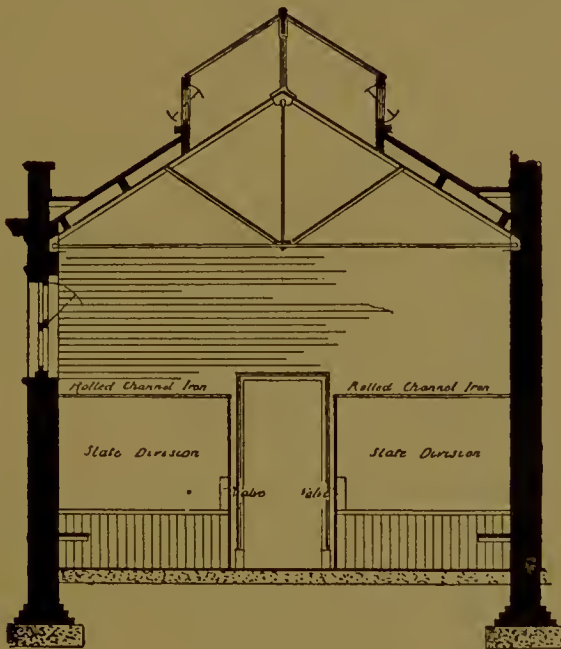
permanent wooden seat to match should be provided. A matter of the greatest importance in connection with slipper-bath arrangements are the valves and wastes. It is evidently desirable that these should be as effective as possible—i.e. that the bath should be quickly filled and quickly emptied; otherwise the attendant's time is wasted. I understand that a good valve of this class is still a desideratum.

As regards the universal adoption of porcelain baths they do not satisfy all superintendents. I have been told that the cold porcelain cooling the hot water when turned in, the bathers complain that they do not have their baths hot enough. Much the same objection was once put before me at an inland spa, where at the public bathing establishment a bathman complained that the cold, thick porcelain cooled the water, and felt cold to the bather, as a remedy for which defect he suggested a coil of hot-water pipes round the bath under the wooden top. There is a good deal in the objection to porcelain. The discomfort of being in warm water in a cold marble bath is well known. Wood, as a top for baths, has also been criticised, the wet wood being objectionable to fresh bathers. For the two evils the remedies are curiously reverse. More business will keep the porcelain bath warm, and less to do will give the wooden top a chance of drying.

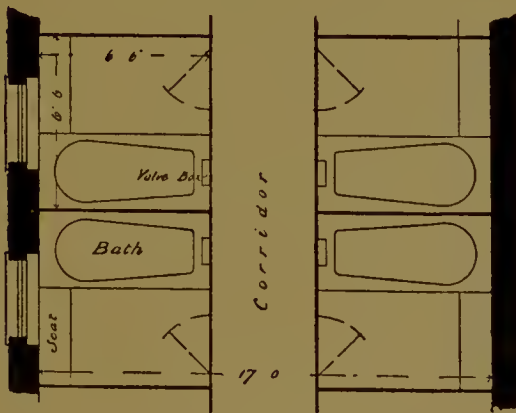
Elsewhere I have said "one other point in public baths I would mark for improvement, and that is the introduction of a cold shower-bath over every warm bath—over the cheapest bath—and at no increased charge. At present we find in the slipper-bath de-



partment of public baths, that one or two of the bath-rooms are fitted with the old-fashioned shower-bath.



SECTION



PLAN



PLAN AND SECTION OF SLIPPER BATH-ROOM.

Now . . . after a hot bath—unless the bather can step from the bath to his bed—the relaxed condition of the

skin and perspiratory glands absolutely demands the tonic application of cold water in order that the cuticle may be strengthened and hardened against cold. Every warm bath, therefore, should have its cold shower. The arrangement need not be anything but the simplest, and a system of waste-prevention would do away with any reckless use of water. The warm bath at present afforded by the Act in public bath-houses is a half-measure. The whole would be complete if a cold shower were appended." \*

This is an important point. Numberless "colds" must have resulted through persons going from a hot bath, reeking with perspiration, to the chilly air of the streets. Cases have come under my personal observation. I would, then, have this cold shower introduced over every warm slipper-bath, in addition to the showers in a douche-room such as has been advocated above.

The hall or apartment in which slipper-baths are placed necessarily requires abundant ventilation, there being much vapour arising from the use of the baths. A section of roof such as that shown in the accompanying illustration is to be recommended.

\* 'Baths and Bath-houses,' a paper read before the Society of Architects, January 12th, 1892.

## CHAPTER V.

## SWIMMING BATHS.

ON the 27th May, 1878, an amendment to the Baths and Wash-houses Act was passed authorising Commissioners to erect and maintain covered swimming-baths at the maximum charges to bathers of 8*d.* first-class, 4*d.* second-class, and 2*d.* third-class. The popularity of the public swimming-bath has continued to grow and at the same time its size has increased. Baths considerably over 100 feet in length are now frequently required. The large swimming-bath at the recently opened Hornsey Public Baths is 132 feet by 40 feet, while the women's bath is 75 feet by 25 feet.

The popularity of swimming-baths, having made them a remunerative feature in public bath-houses, has enabled Commissioners to afford good accommodation. By contrast to the newest baths, the older swimming-baths seem frequently very inferior. Several are a disgrace to London.\*

\* Those at Endell-street, Bloomsbury, for example. Others are as bad. Since the low prices of the baths of the public establishments prevent private enterprise from flourishing, it becomes the duty of Bath Commissioners to see that good first-class swimming accommodation is afforded. Proprietors of private swimming-baths cannot keep high-class concerns going at the low prices of the public baths. The fine floating "Cleopatra" swimming-bath off the Thames Embankment was closed shortly after it

In some of the older London baths, as those at Kensington and Marylebone, three classes of swimming-baths are provided. A better arrangement is two classes only, and if a small third bath be provided let it be for women. The second-class bath will be smaller than the first, and the women's bath again smaller than this.

Baths over 100 feet in length afford a good swim, but a width of over 40 feet is not desirable. An under-sized swimming-bath is a very useless thing. As to depth, all practical purposes are served by baths giving a water-depth of from 3 feet 6 inches to 6 feet 6 inches for men, and from 3 feet to 6 feet for women.

The hall in which the swimming-bath is constructed must be so much wider than the bath, according to the arrangement of the dressing-boxes, &c. The space required from the edge of the coping of bath to the face of wall cannot be less than 7 feet, and 7 feet 6 inches and 8 feet are better. The depth of dressing-boxes will require to be 3 feet 6 inches, or 3 feet 9 inches, and the gangway in front must be 4 feet or 4 feet 6 inches wide. A bath 40 feet wide, with a row of dressing-boxes on either side, therefore requires a hall 56 feet wide, although 55 feet may suffice. The length of the hall will depend on the arrangements made. If there be a row of dressing-boxes at one end, and the other end be left unencumbered—as is usual, and most convenient—a

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was opened—presumably from the cause stated. Many swimmers must thus have been deprived of their bath, and if they found the accommodation of the nearest public baths very inferior, they would have just cause to complain of the working of the Act of Parliament.

bath 100 feet long will require a length of hall of 118 feet, which will leave a 10-foot gangway at head of bath for diving stages, toilet places, &c.

The dressing-boxes of a first-class bath will be 3 feet 9 inches square in the clear, or of a width of about 4 feet from centre to centre of wood partition. The second-class dressing-boxes are frequently made somewhat smaller.

In one or more of the angles of the hall are ordinarily placed the sanitary conveniences ; but in many baths, when thus situated, they have been found a nuisance, and been removed further out of the way. The Richmond baths are a case in point.

In most first-class baths a cold shower-bath is required for the use of swimmers. A warm, or hot one, would be more reasonable, seeing that the majority of bathers unadvisedly prolong their stay in the water until they are blue with cold.

Most first-class baths are now required to have a good gallery for the public on occasion of swimming entertainments, &c. They are generally carried on rolled iron joists as cantilevers over dressing-boxes, and continue usually round three sides of the hall. A strong balcony railing is required.

The diving-stages must be placed at the head of the baths. They are made in various forms. The supports are mostly of cast and wrought iron, and the boards of oak or ash, with slotted eyes and covered with cocoanut fibre matting, to afford a foothold to the divers.

The more light and ventilation that can be gained in the swimming-bath the better for both comfort and

appearance. A long ridge skylight is the first requisite, and clerestory windows add very much to the cheerful appearance of a bath. A movable light in either of the end gable walls is very useful for ventilating purposes.

The proper material for the roofs of swimming-baths has been a matter of some discussion. Wood has been used with good effect ; iron has been employed with economy. On wood there is less condensation ; iron is cheap. It is a matter, apparently, of individual choice.

In excavating for swimming-baths it has been suggested that the excavation should at first deal only with the side walls of the bath, and that after the walls have been erected the "cake" should be taken out, and the floor of the bath put in. Every architect is at liberty to employ the method that most commends itself to him ; but nine out of ten practical constructors would follow the usual system. It is a great thing to get rid of all the mess of excavating before commencing building operations.

Swimming-baths may be constructed wholly of concrete, or with concrete bottom and brick-in-cement side walls. In any case glazed bricks will be required for the face, and bricks glazed on the flat side form a good bottom. The main work should be executed in a pure, white-glazed brick. Ornamental bands are sometimes introduced, and a few dark bands along the floor of bath, in the direction of its length, are said to be useful as a guide to divers. They are best omitted.

There is, of course, great pressure and weight of water in a large swimming-bath, and the floor and walls



should be proportionately stiff. On bad soils much concrete is required for bottoms, and the foundations of side walls should be spread out considerably in two or more setts-off. On pp. 49, 50 and 51 of 'The Turkish Bath' are description and plans of a plunge-bath constructed with horizontal and vertical courses of asphalte to prevent leakage. The same construction is applicable to a swimming-bath, and has, indeed, been successfully adopted in several new baths. The bottom and the side walls of concrete and brick-in-cement respectively are first constructed, and the whole surfaces carefully coated with asphalte, care being taken that open seams and joints in the asphalte are not left to defeat the end of the process, viz. the prevention of leakage.\*

Some constructors will put the concrete bottom on puddle clay, and puddle behind the side walls. A better way is to rely on a good thickness of concrete, and well-laid, sound brickwork, with the stratum of asphalte advocated above. A bath constructed with good cement concrete bottom, and with side walls of good thickness, and faced with glazed bricks in cement, should not leak to any noticeable extent, and a carefully laid stratum of asphalte, in two thicknesses, should render it practically water-tight.

The bottom of a bath slopes from the shallow to the deep end, and the foundations of the side walls should follow this slope. It is customary in this country to make the slope of bath even from end to end. Some Continental baths have a sinking of considerable depth

\* I am told that the majority of the older London swimming-baths leak more or less.

at the deep end, as at the bath-house in the Wienstrasse, at Vienna. Figures relating to the depth of some of the German swimming-baths show a surprising depth of water at the deep end. This is explained by the fact that there is a sudden dip in the floor of the bath and a deep pool formed for bathers. Such a device, however, is dangerous where there are non-swimmers or indifferent swimmers in the bath.

The sides of a good swimming-bath are vertical. Baths have been constructed with steps all round—as Brill's circular bath at Brighton—but the customary arrangement is here the best. Solid steps into the bath, too, as formerly adopted, have given place to detachable wooden steps.

The shape of swimming-baths now favoured is the rectangular of long proportions. A bath of excessive width needs a greater span of roof and heavier trusses. Length is what is wanted for swimmers, and a comparatively narrow bath is safer and more convenient for indifferent swimmers.

Circular corners are said to facilitate cleansing the bath, but die-square angles look well. The water-level in the bath should be about a foot from the coping, certainly not more than 15 inches. Clear of the water-level a safety hand-rail is required, for which there is nothing better than galvanised iron, although handsomer materials are available. Gunmetal has been used at a most extravagant and unwarranted outlay. Moreover, the peculiar position of the hand-rail renders it difficult to clean and polish. Bright metals are therefore objectionable.

The coping at the top of the side walls of the bath forms a finish to the paving of the gangways. It may be of York stone, rubbed slate, or artificial stone, &c. Rubbed slate has a very handsome appearance, its sombre colour forming a fine contrast to the light glazed brickwork and the delicate green of the water in the bath. With small dark red tiles on the gangways the effect is very pleasing. Cheaper materials, however, have often to be employed.

There are two ways of constructing the flooring of the gangways. It may either fall towards the bath or towards the dressing-boxes. The coping may be channelled to receive the water that drains off the bathers, or a channel can be formed next the boxes. The latter plan has the recommendation that it does not leave an unpleasant hollow to the feet near the edge of the bath. Along the channel will be required small metal—gun-metal for choice—gratings, moulded to the same outline as the channel, to draw off the water to the drains.

For finishing above the concrete bed of the gangway floors a number of materials are suitable. None are better than the hard, dark red paving tile. For cheapness, the 9-inch tile will be used; for effect, the little 3-inch or 4-inch squares, set square with the coping.

Much of the effect of a swimming-bath hall depends upon the design and workmanship of the dressing-boxes. At the best, they are not features calculated to add to the impressiveness of architectural effect. With a gallery above, having nicely designed balustrading, the general *coup d'œil* of a swimming-bath hall is improved. Cheap and flimsy woodwork will spoil any building, and

thus trumpery dressing-boxes irretrievably spoil the appearance of any swimming-bath. They should be made as roomy as possible, consistent with due and necessary economy of space, and should be neatly put together with solid framing and nicely-designed doors. The sides should be continued up to the ceiling of the gallery, or, at least, the intervening space fitted with some sort of wood or metal open-work sufficient to prevent any ill-disposed bather from climbing over the sides on predatory excursions. The doors will of necessity be made folding, and to open inwards, with a space of six inches or so between the floor and the bottom of the doors. Neat brass bolts should be fitted, and in some cases brass latches are provided, so that the bather leaving his box shuts the door, and has to ask the attendant to open it for him. A strong seat on proper bearers is required, and a movable wooden floor of bars and spaces to be placed over the permanent flooring.

In constructing the dressing-boxes, each partition requires a front and a back post—that in front may be architecturally wrought, chamfered, moulded, &c., or with cap and base. A sill, head, and centre rail will be required, and the filling-in can be of matched and beaded or V-jointed boarding. The actual doors need not be more than 4 feet 6 inches high, and some nice examples have the upper panels filled in with an ornamental metal grill. The seat should be strong—2-inch deal being none too heavy.

A wooden gallery front may be made to look very well. The balustrade must be very strongly fixed and proof against the pressure of people in the gallery

on entertainment nights. The gallery being usually and necessarily made to overhang the dressing-boxes, a slight difficulty arises in securing a wooden balustrade. Either the cantilevers must be projected, and iron struts placed—as in the illustration on p. 41—and bolted to top flanges and posts, or a stay-bar must be fixed inside the gallery. The latter plan has been frequently adopted, but it is very bad, each stay being a stumbling block, and dangerously interfering with the free egress of occupants of the gallery. In the case of a wooden roof, the balustrade posts can be continued in an architectural manner to the tie-beams or hammer-beams, and thus afford a firm support. It is, after all, a simple matter if prearranged; but if the point be not studied until the gallery is erected, awkward ties and struts may have to be fixed.

The walls of swimming-bath halls are ordinarily lined with white glazed bricks for first-class baths, and pressed bricks for second-class. If a high dado, 5 feet, of glazed bricks can be afforded in the latter case, it is a cleanly and most desirable arrangement and an improvement to the dressing-boxes.

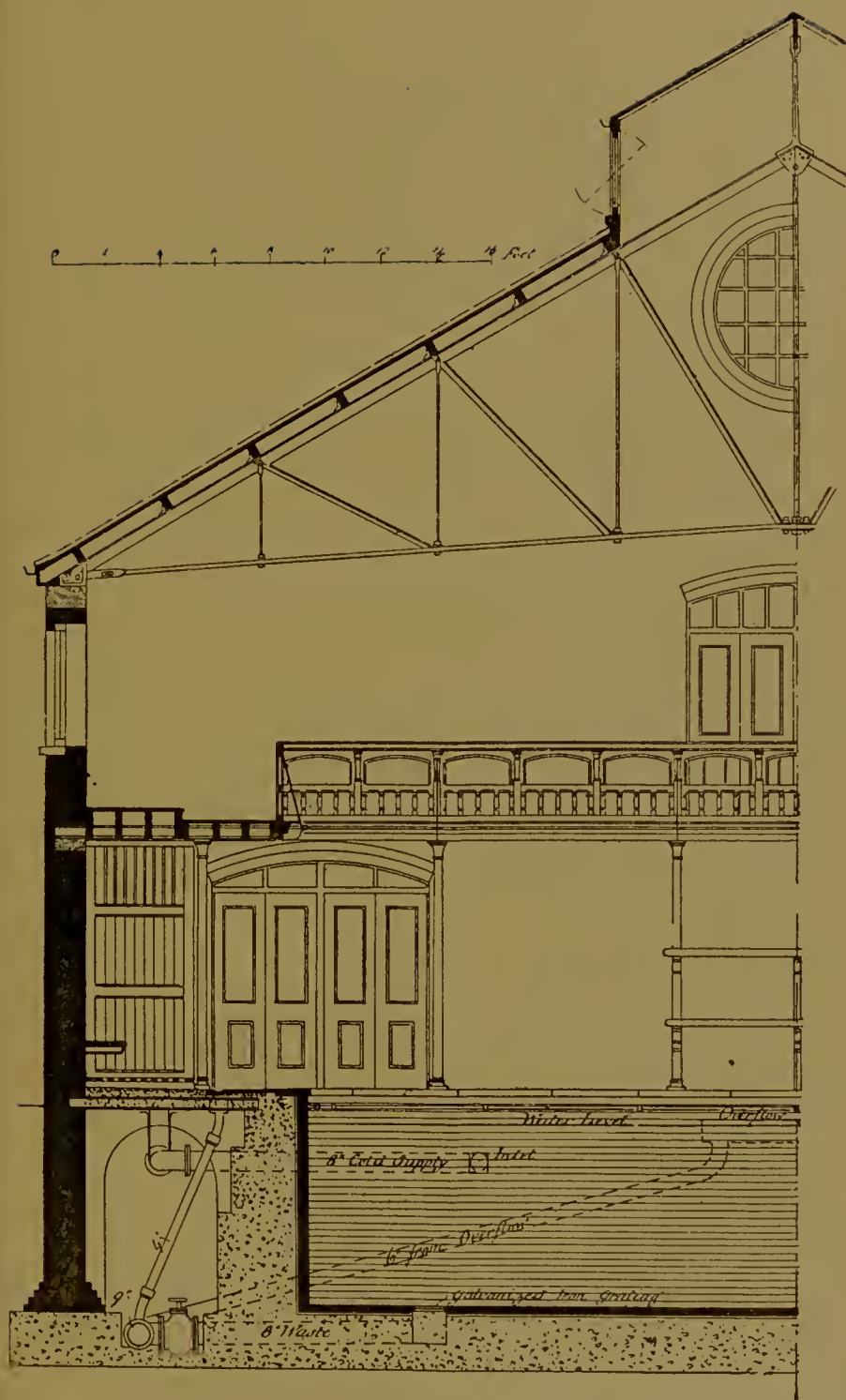
Whilst excavating and constructing the swimming-bath, the requisite arrangements must be made for the various pipes, &c. The drains must be laid both for waste, overflow and gangways. The position of waste, inlet and skimming overflow, must be determined, together with that of pipes for hot-water or steam circulation.

The half-cross section of a swimming-bath illustrates what has been recommended. The swimming-bath

itself is shown constructed of cement concrete with glazed brick sides and floor, and a  $\frac{3}{4}$ -inch layer of asphalte as a waterproof course. Specifications should provide for a good key for the asphalte, either formed during construction, or with a rough hammering and chiselling afterwards. Neither with concrete nor brick-in-cement side walls does the bonding appear, in a sectional drawing, satisfactory to the eye ; but practically, with the glazed face strongly built in cement, and a coping bedded over all, and a constant pressure of water, all requirements are fulfilled. Great care is required in making good to asphalte round waste, inlet and other pipes, or there will be a leakage at these points.

The waste-pipe, with galvanised iron grating in floor of bath, is shown, with a screw-down sluice-valve, and a wide skimming overflow, and the drain from gangway and water-inlet are indicated. The space between the bath and wall is here utilised for pipes. If there be the requisite space on the other side of the wall, that behind the bath and under the dressing-boxes is best filled in and rammed. Better support is thus afforded to the bath walls, and culverts can be constructed where necessary from pipe subway to bath wall. The floor of the gangway is of concrete on iron joists, which carry the cast-iron columns bearing steel joists acting as cantilevers and supporting the gallery. The section further shows the dressing-boxes, doors to entrance-hall and those at the head of the stone stairs to gallery, the bull's-eye at end of hall, and the iron roof with ventilating lantern. Plain, practical requirements only are shown, no pretension being made to elaborate architectural





HALF-CROSS SECTION OF SWIMMING-BATH.

effect, which is seldom required, and never desirable in public bathing establishments.

In almost all recently erected public baths in London provision is made for converting the large swimming-bath hall into a public hall for meetings, &c. Several points have therefore to be studied. There must be direct access to the hall, and, where the building is within the Metropolitan area, exits in accordance with the requirements of the revised regulations of the London County Council. There must be a suitable stone staircase to the gallery, with steps not exceeding twelve in each flight, and there must be gallery exits, also in accordance with regulations. The heating of the hall must be on the "low-pressure" hot-water system, and other requirements detailed in the Metropolis Acts Amendment Act must be observed. The conversion from a bathing place to an assembly hall will be best accomplished by the provision of strong fir trestles in the bath, made in graduated height from deep to shallow end of bath, lettered and numbered in due order, and stored—when not in use—in storerooms in the basement. The flooring will be formed of 3-inch planks, bearing on the trestles every 5 feet.

In some cases the audience sit actually down in the bath; but this is a miserable arrangement. The thing had best be done thoroughly and well when it is undertaken at all. To this end I would make the whole of the dressing-boxes in the first-class swimming-bath detachable and easily removable in sections, so that when used for meetings, &c., the hall would present a handsome, unobstructed appearance. The spaces of

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about 8 feet that would then remain clear between the gallery columns and the side walls would thus be available for side passages during entertainments, meetings, &c. This space could be left bare or not, as might be chosen. If bare it would have to be completely tiled in the first instance under the dressing-boxes. If covered, the planking over the swimming-bath would have to be kept up to such a level as would enable it to be continued over the gangways.

## CHAPTER VI.

## THE PUBLIC WASH-HOUSE.

THE public wash-house, together with the establishment laundry, form quite a separate department, and should be kept distinct from the bathing department. In the public wash-house private washers are accommodated. In the private laundry the towels and bathing dresses of the establishment are washed.

The position of the public laundry, with respect to the other departments of the establishment, will depend a good deal on the nature of the site and its approaches. As a rule, proximity to the second-class women's baths will be found desirable. In many cases it will be convenient to group the entrances to wash-house and to second-class women's baths together, with a central pay-office between. One clerk can thus control the two entrances. At other times a separate and distinct entrance to the public wash-house will be best. By this means the whole attention of one pay-office clerk is devoted to the laundry, and inasmuch as the control of the public wash-house entrance necessitates much supervision and checking of time, &c., this would, in the case of large establishments, be found the most practical arrangement. The general scheme of

entrances to the establishment would therefore be:—a general, central pay-office, controlling both first and second-class men's and women's baths, with first and second-class lobbies and ticket-windows ; and a separate entrance to the wash-house. A way in for stokers and engineers to boilers, &c., in the basement, would complete the provision for entrance.

As may be imagined, the class frequenting the public laundry necessitates much overlooking and control. It is therefore advisable, to prevent attempts at egress without paying, to arrange in the entrance-hall or lobby, within reach and under the control of the clerk in the pay-office, a dwarf gate, as indicated in the accompanying plan. The use of this will be self-evident. Turnstiles are sometimes employed for second-class baths ; but as the washers carry large bundles and baskets, they are not convenient for use at the entrances to the public laundry.

The laundry will comprise one large, spacious, well-lighted and ventilated wash-house, with provision for drying, and an ironing and mangling-room, together with a waiting-room near—or perhaps *forming*—the entrance lobby, and necessary conveniences. In the wash-house must be arranged a series of washing-places, with washing-tubs and boiling and rinsing tubs, and drying-horses on rollers, in number corresponding to that of the washing-places. The most desirable method of placing the wash-tubs with regard to the drying-horses is with the latter on one side of the washers, so that a woman may easily observe her own particular drying-horse. It is therefore bad to place the range of

tubs so that the washers will have their backs to the drying place. On reference to the accompanying plan it will be seen that all the washing places are arranged in accordance with the principle advocated, and that without leaving her place any washer can see what is happening at the drying chamber.

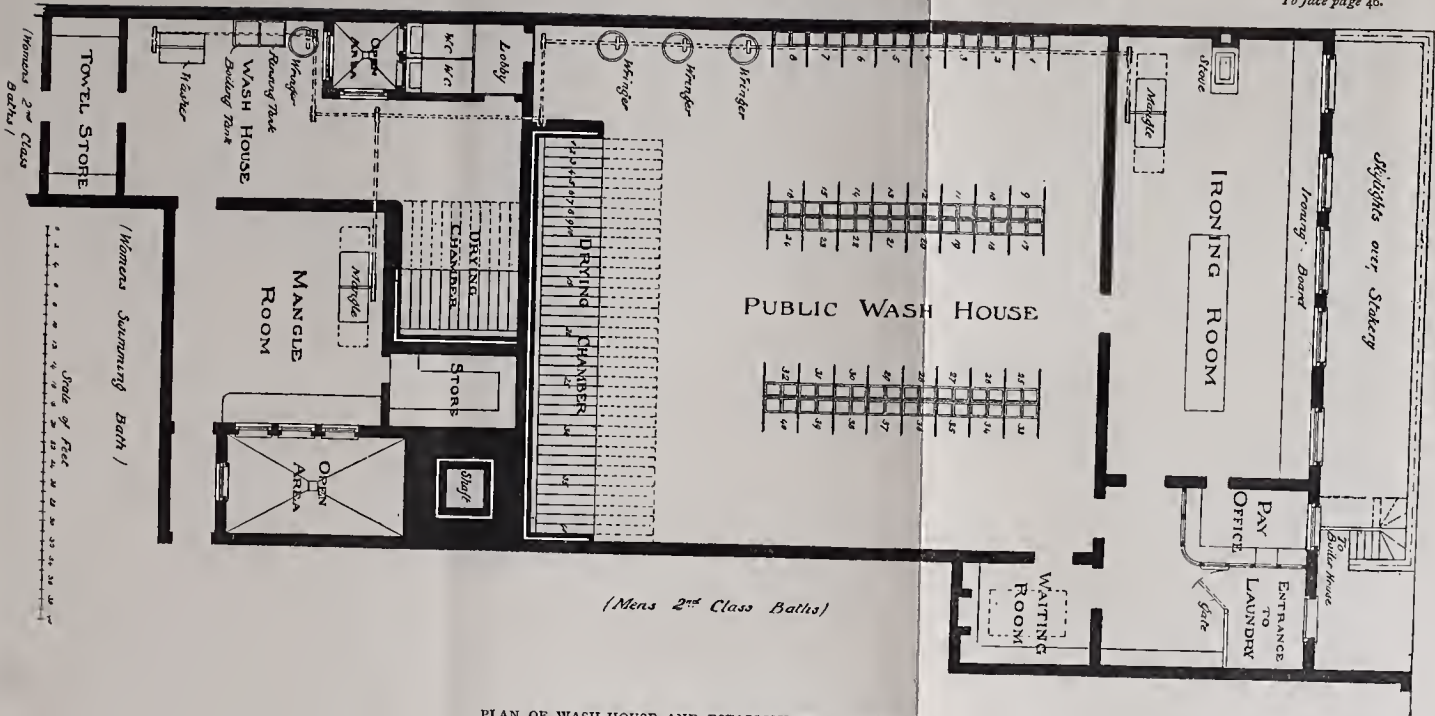
In the wash-house must also be provided a proper number—two, three, or four, according to the amount of business done—of centrifugal wringing machines, or “hydro-extractors.” These must be placed in a position where there will be a minimum of danger to the women from the belting and gearing, and where the scheme of shafting will be most simplified.

The operation of the washers is thus:—(1) Washing, boiling and rinsing in the tubs in the washing-places—to which end hot and cold water and steam supplies are provided to each set of tubs; (2) wringing in the centrifugal machines; (3) drying in the drying-closets; and (4) ironing and mangling in the ironing-rooms. This order and routine must evidently be borne in mind when we would make a convenient plan.

In the plan given herewith, it will be seen that the entrance to the public laundry, the waiting-room, the wash-house and ironing-room are so arranged as to avoid as little clashing as possible in the movements of the washers. It is not actually necessary to pass through the waiting-room on the way to the wash-house, and from the ironing-room the washer can pass out without returning through the wash-house. With a more favourable site a still better plan can be produced, whereby the washers can enter the wash-house at the end where



*To face page 46.*



PLAN OF WASH-HOUSE AND ESTABLISHMENT LAUNDRY.



the tubs are placed, leave by the drying-closet end, and so pass out through the ironing-room.

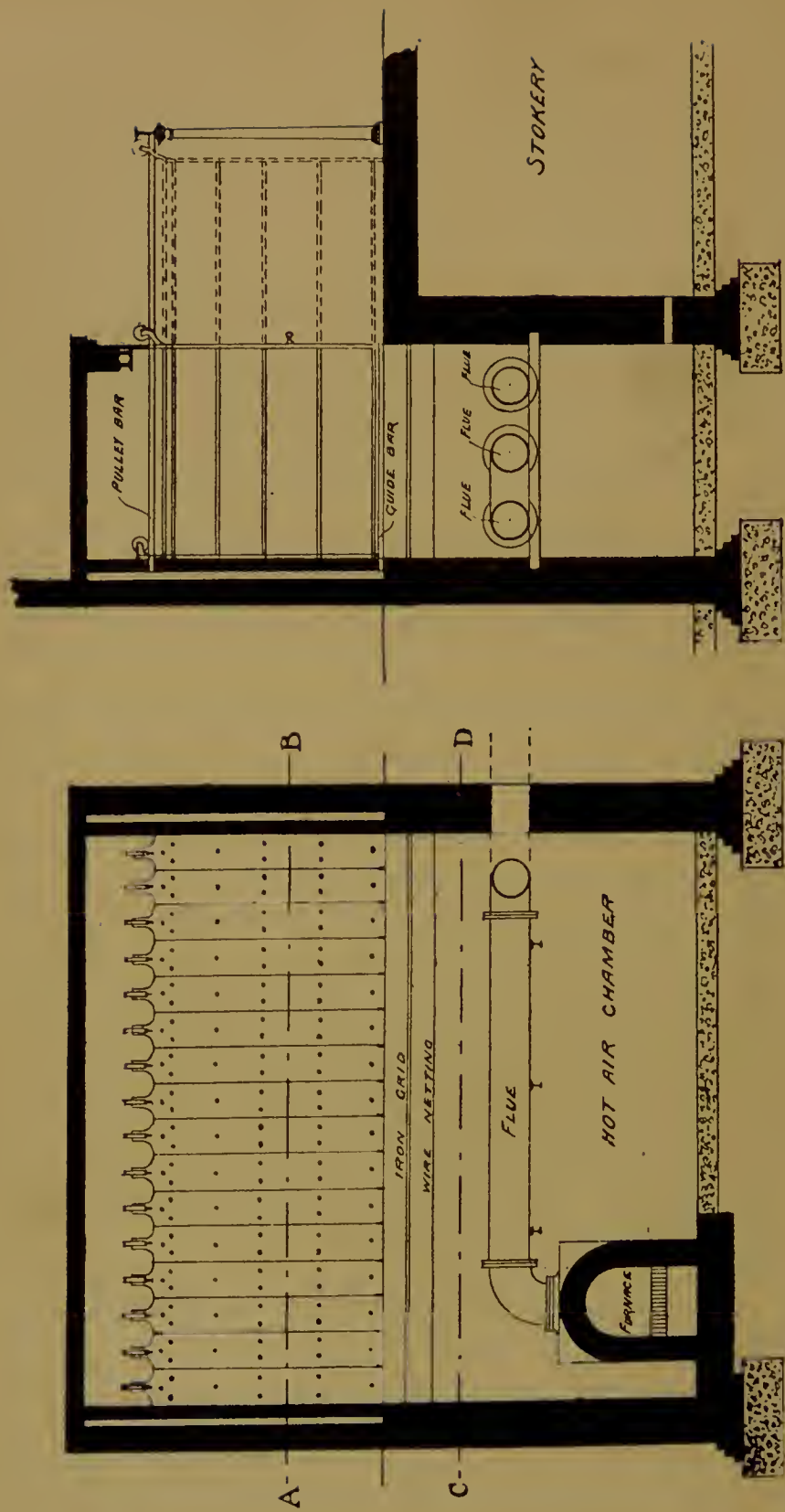
The nature and construction of the washing-places may vary considerably. Galvanised iron has been employed for the divisions, as well as plain unenamelled slate, one inch thick, such as is often used for the divisions between second-class slipper-baths. Each compartment must be at least 3 feet 6 inches wide between the side divisions, and these divisions may be 3 feet deep. A height of 6 feet for both these and the central or back division is sufficient. An economical and general arrangement is to place two rows back to back, as on the plan.

The plan shows only two tubs to each compartment, but three is the number usually provided, a narrow trough at the back being used for boiling, and two other tubs for the purposes respectively of washing and rinsing, the two latter being placed as on the plan.

Movable nozzles to the water-taps allow hot water service to boiling and washing tubs.

The main hot and cold water supply pipes and the steam pipes will run either overhead in the centre of each double set of washing-places, or under the floor with branches to each compartment. Peculiar circumstances may compel different arrangements ; but the overhead pipes will, as a rule, be found the most practical and convenient.

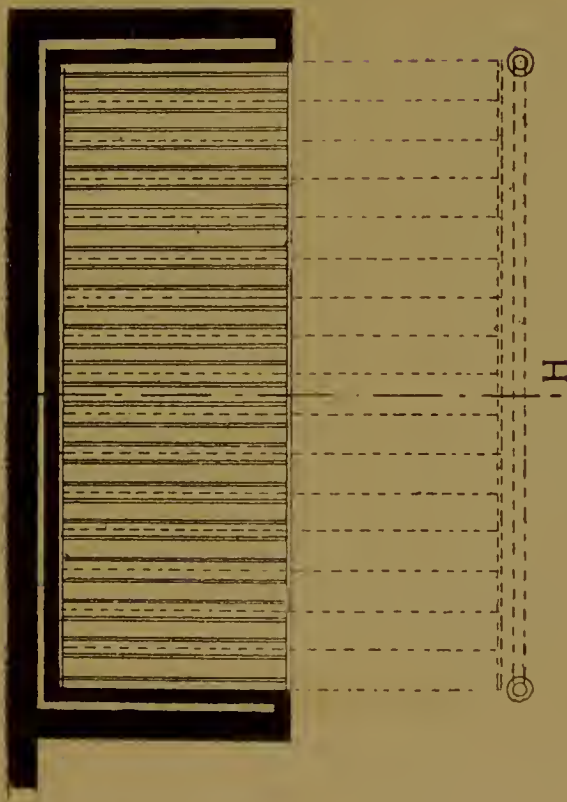
Drainage from the tubs is evidently an important matter. In some cases a large open channel, into which the wastes from the tubs discharge, will be found convenient ; at times separate wastes passing through the



SECTION E-F.

SECTION G-H.

G

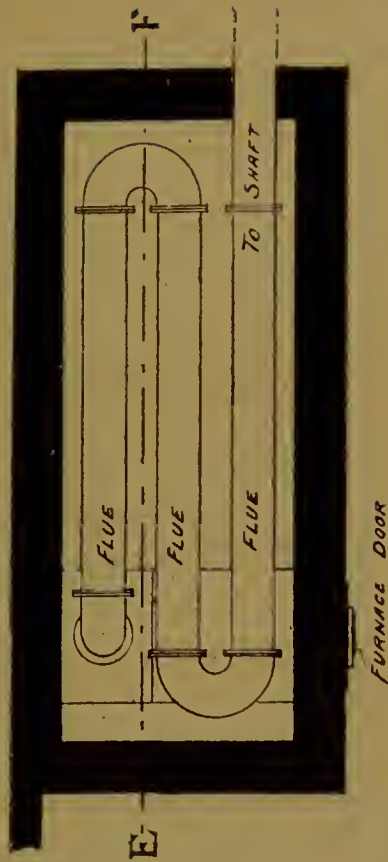


PLAN AT A-B.

SCALE



FURNACE AND DRYING CHAMBER.



STOKERY

PLAN AT C-D.

floor and connected with the drains will be the best method. Where there is so much water, the flooring, if over a basement, should be impervious—of asphalt or patent concrete, with suitable falls to channels or gullies. A drain or channel must be placed to receive the waste water from the centrifugal wringers.

In the drying chamber the range of “horses” must be similar in number to that of the washing compartments. They are best when made to run on overhead rollers and should be about 6 feet long by 6 feet 6 inches high. Effective means must be employed for heating the chamber. Steam has not been found altogether satisfactory for such purposes. As a rule a comparatively low pressure of steam is employed in the boilers of the establishment, and the temperature obtained from a battery of steam-pipes is not sufficient to supply the large volumes of hot air required for drying purposes. In several establishments steam has been tried and has given place to a special apparatus for heating. This will be best made with a large fire-brick furnace of ordinary design, with arched top and strong wrought or cast iron flue-pipes in two or more bends and returns, so that the whole available heat of the furnace may be utilised. The furnace, hot-air chamber, and drying closets must be built so as to economise the heat, with hollow walls and walls with sand cavities where necessary, to prevent loss by radiation. Ordinarily, no means of ventilation or carrying off vapour from the drying closet is provided. So much heat escapes with the rolling in and out of the horses by the washers that no great amount of ventilation is required ; but a vent or shaft of some sort,



with means of regulating the draught therein, would be found useful in many conditions of the weather.

In certain states of the atmosphere much vapour accumulates about the upper part of a wash-house unless means are provided for clearing the air. A large lantern with deep sashes hung in centres should always be provided, and a fan-wheel in a gable-wall is of great service. It keeps the air of the wash-house practically free from vapour, and as there is always power and shafting to the steam wringers it is simply a matter of the first cost of the fan-wheel and a little additional belting.

A wash-house should, if possible, be lined with glazed bricks. A high dado of this material should certainly be provided, when the upper portions of the walls can be of pressed bricks, &c.

In the ironing-room will be provided a powerful stove or stoves for heating flat-irons, ironing benches and tables, and—according to the size of the building—one or two large box-mangles driven by steam.

The accompanying illustration, pp. 48 and 49, shows a small drying-chamber such as described above, with fire-brick furnace and cast or wrought iron flues. The former will last the longest; the latter will allow more heat to pass into the chamber. The horses run on overhead rollers, with guide-bars and friction rollers below. An iron grating is placed beneath the horses, and wire netting prevents anything from falling on to the flues and becoming scorched. A small iron door for inspection should be provided at one end.

## CHAPTER VII.

## THE ESTABLISHMENT LAUNDRY.

THE private laundry differs from the public laundry not merely in point of size but in the arrangements made for washing. In the public wash-house the washing is done by hand by the women, while in a modern establishment laundry one or more powerful alternating or revolving washing-machines save a vast amount of hand labour. In place, therefore, of the washing-tubs in compartments, there will be required washing-machines, rinsing and boiling tanks, and centrifugal wringers, in number and size according to the work to be performed. An ironing-room, strictly speaking, is not required ; but a mangle-room may be provided, as at some baths it is the custom to mangle the towels for first-class bathers. Storage-rooms will be necessary, preferably two in number, one for regular use and the other for winter, when, bathing being much less than in summer, space is required for towels, &c., not in use. The arrangement of shafting is here again an important point to be duly considered when planning, that half-cross belting and mill-gearing may be avoided as far as possible.

The general arrangement of the suite of rooms

dévoted to the purposes of the establishment laundry differs from that of the public wash-house, just as the methods of washing differ. The private wash-house must be arranged, if possible, so that the soiled towels, &c., are brought to a convenient position with relation to the steam machinery. This position will be determined by a consideration of the best means of saving labour and time in unnecessary lifting and transferring of the heavy wet articles during the process of washing, drying, and mangling. If the soiled towels are brought to the laundry in small hand-trolleys—a convenient method—the load must be discharged as near as may be to the washing-machine. The latter must be in close connection with the boiling and rinsing tanks or tubs, so that the articles undergoing cleansing may be easily transferred from one to the other. Having been washed, boiled, and rinsed, they will be taken to the wringers, which must, therefore, be conveniently at hand; and from the wringers to the drying-closets, whence they will pass to the mangle-room for folding or mangling, as the case may be. The sequence of the washing processes should be observed. A properly planned private laundry need take but very little space. One man is frequently able to superintend the machines. Endeavour should be made to so arrange the rooms that the soiled articles will be given in at one door and passed out cleansed at another.

In the construction of walls, floors, and roofs, and in point of ventilation, the same principles must be studied in the establishment laundry as in the public wash-house.

*Laundry Machinery.*—The desiderata are simplicity of construction and ease of repair. Repairs of this nature will be effected by the engineer in the workshop with which every public bath-house should be provided. The machinery—wringers, mangles, and washers—may be constructed for under-driving, no belting or shafting appearing above the level of the wash-house floor ; but in the majority of cases the ordinary system of driving with overhead shafting and belting is the most suitable and the simplest to keep in repair.

It is evidently of the greatest importance to most carefully consider the positions to be assigned to the steam machinery. Each machine should be placed in the position that both theory and practice may determine to be the safest, the pulley sides of the machines being placed away from those parts of the room most frequented by the washers. The shafting should be well overhead, with proper guards and boxings to protect from the belting where necessary. These cautions, needless to the engineer accustomed to mill-work, do not seem out of place when addressed to architects, who are apt to tentatively show the position of machinery on plan with a vague idea of further considering the matter at some future time ; but, as we know, this time never arrives—unless an engineer is employed to rearrange the machinery portion of the design—and the execution of the work finds the machine in the spot first indicated on what was perhaps merely a rough sketch-plan.

## CHAPTER VIII.

## THE ENGINEER'S DEPARTMENT.

PRACTICAL requirements and the demands of convenience and economy place the engines, boilers, heating apparatus, &c., in the basement. The most usual and the most suitable position in the building is underneath the wash-house and laundry department, with as much open area to the boiler-house, engine-room, &c., as may be possible.

The department will include :—

A boiler-house, with stokery and coal-bunkers.

An engine-room.

An engineer's workshop.

Heating apparatus for drying-closets.

Store-rooms, and probably

Electric lighting room, with engine, dynamo, and store for accumulators.

The size and scope of the boiler-house will depend upon the nature of the provision to be made for hot-water supply and steam supply, and for heating the water for swimming-baths. As in this work it is not intended to refer to any patent or special systems of manufacturers and others, I shall treat only of simple and effective methods of heating on ordinary, straightforward plans. Our boiler-house will accordingly require

to be fitted with boilers of ordinary model. The older baths have mostly Cornish boilers with single-furnaces. These are, for many purposes, including that of large public baths, out of date. The long, double-furnaced, steel "Lancashire" boiler is the boiler of to-day. In public baths of large size three of these boilers should be fitted. Two will be required for daily use—one under steam, and the other supplying hot water to baths. One of the three will, in ordinary times, be out of use or in process of cleaning or repair ; but it will be available for emergencies, as, for example, when there is a temporary demand for a greater supply of steam or of hot water. The absence of the third boiler would, at times, be found very inconvenient in a large establishment.

The position of the boiler-house will be determined by several considerations. There must be light and air to the stokery, the boilers must be in proper relation to the coal-bunkers, which must, in their turn, be in a position facilitating coal-supply and stoking. An ordinary arrangement is to place the coal in vaults under the pavement of a side or back street abutting on the establishment. The distance between the point at which work is done by the boilers and the boilers themselves must be reduced to a minimum, so far as is consistent with peculiar circumstances and with the above-mentioned desiderata. Every foot of steam and water-pipe saved is not merely an economy in first cost but in working. Bends and changes of direction should be avoided as far as possible, the aim being to keep the pipes in straight lengths.



The chimney-shaft must be planned with the boilers. For three large Lancashire boilers a shaft from 80 feet to 85 feet high from the stoking level, and 4 feet in internal diameter, will be proportionate to the work to be done. If in London it will be required to have foundations and footings, thicknesses of walls, batter materials, cap, and independent fire-brick lining, as specified in the regulations made by the late Metropolitan Board of Works, and now enforced by the London County Council.

The boilers in a large establishment should be amply large. Small boilers are a poor economy ; but the size should be in proportionate relation to the size of the establishment. Where much work is required a width of shell of 7 feet 6 inches or 8 feet will allow increased sizes to furnaces ; a 7-foot boiler, however, is a large boiler, and, with ordinary firing, should answer every requirement of the largest establishment. Boilers of this size and purpose are commonly made for a working pressure of steam at 100 lbs. per square inch, and although a far lower pressure is all that is needed for every-day purposes, where there is a system of heating swimming-baths by steam injection the high pressure will be turned to good account, particularly when the water has to be raised, at short notice, from its normal temperature to the 72° customary in swimming-baths.

The boilers must be interchangeable. Either the one or the other, in pairs or singly, must be suitable (1) for steam, and (2) for the supply of hot water. They will therefore be set as ordinarily, side by side, with just the space required for flues between, and will have

valves, pipes, and connections to the end and aim above mentioned. Each boiler will require a safety-valve at the stoking end, a manhole at the other end, and cast iron seatings between, for connections for the following purposes :—

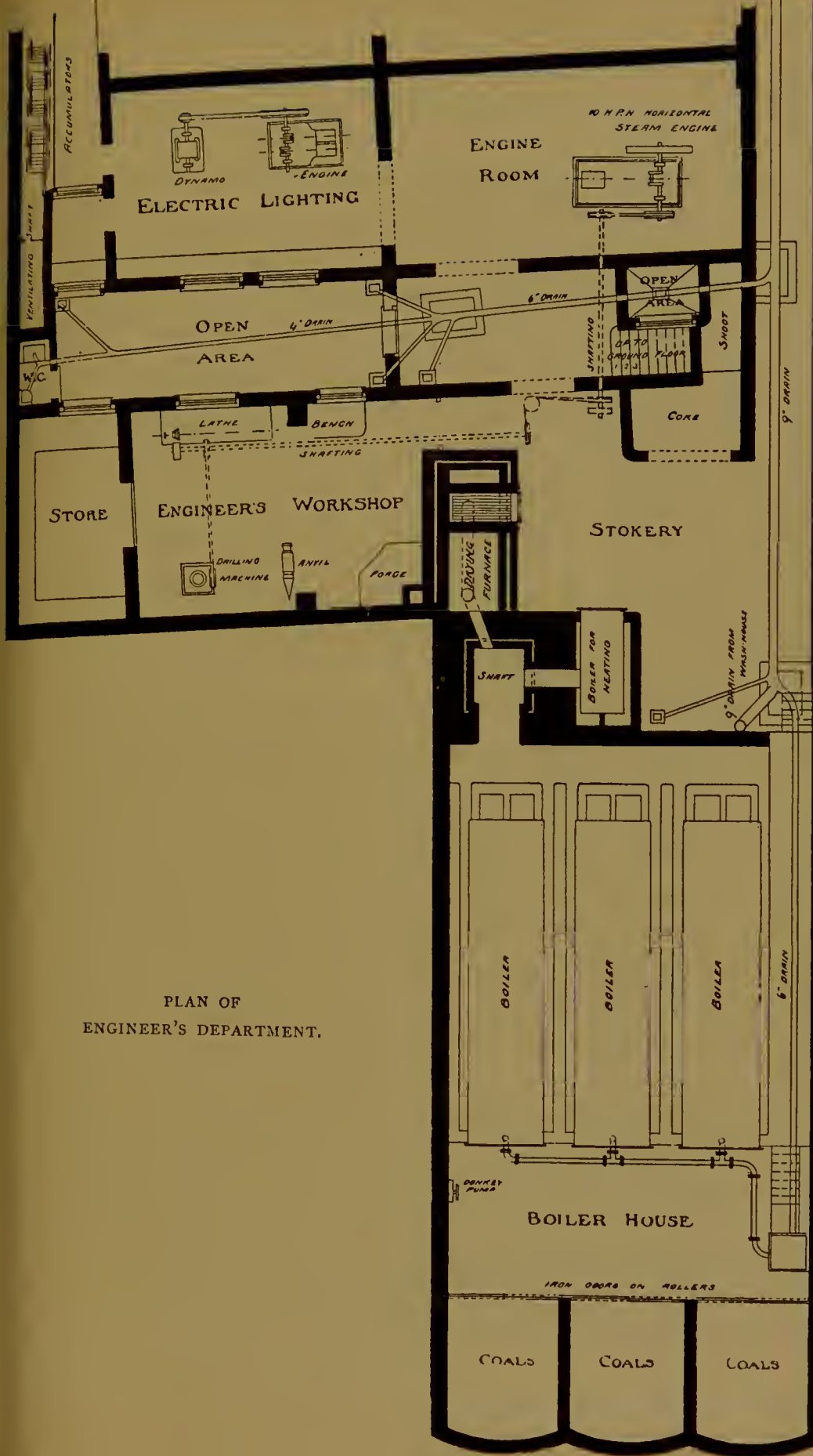
- (1) Cold-water feed.
- (2) Hot-water supply.
- (3) Low water and high steam safety-valve, and
- (4) Steam supply.

Valves with full-way must be placed over Nos. 1, 2, and 4 seatings, and flanged pipes must be provided with a view to the interchangeable arrangement. Taper pipes will communicate with the main steam and water-supply pipes.

When a boiler is employed for hot-water supply it will be fed by the pipe connected with the top, passing, however, to near the bottom of the boiler. For steam purposes injectors will be used, and a donkey-pump on the wall of the boiler-house is a needful auxiliary.

The draining of the boilers when blowing-out may be a source of difficulty where the level of the main sewer is rather high. Where it is thus impossible to blow-out direct into the drain, the following expedient may be found better than the use of sump and pump. Provide on one side of the stokery of boiler-house a tank—which may be termed the “blowing-out tank”—with bottom level with that of boiler. Connect the blow-out of each boiler to a pipe leading to the tank, and put an over-flow from tank to drain. The boilers blowing-out under a few pounds of steam will then be easily emptied.

Where a sump-well is used a powerful steam-pump



PLAN OF  
ENGINEER'S DEPARTMENT.

with double delivery will be required. It is always desirable, if possible, to blow out direct into the drain by way of a small sump, and it is important to be able to drain the lower flues of the boilers.

Ample head-room over the boilers should be allowed for pipe connections, and for examining and repairing valves. A minimum of 4 feet 6 inches from the top of boiler-shell to the under-side of any girders supporting the floor above should, if possible, be observed.

Many boiler-houses present a permanent scene of disorder and untidiness, and an involved system of pipes and connections. This is quite unnecessary if the place is intelligently planned from the first, and care taken in the arrangement of the fittings. The end wall of boiler flues, when built in glazed bricks, adds greatly to the appearance of the place, and iron doors on overhead rollers as bulkheads to the coal-bunkers will keep the coaling arrangements tidy.

In the boiler-house, in some convenient position, will be required a feed-water heater for utilising the waste steam from engines, and the ordinary arrangements for condensation.

A special thermometer indicating the temperature of the hot water supplied to the baths is a useful boiler-house fitting.

*The Engine-room.*—This should have a steam-engine of economical working for driving laundry machinery, &c. A horizontal engine of about 8 to 10 horse-power is most generally useful. It will be supplied with steam from the steam-boiler, and be connected with shafting and belting as may be required. An engine belted to

the machinery shafting is best, but peculiar difficulties may necessitate a vertical shaft with bevelled gearing to the engine.

*The Stokery for Drying Furnaces.*—Here will be the fire-brick furnaces for drying-closets. One or two furnaces will be required, according to the size of the laundries. Furnaces 3 feet wide and 4 feet long, with 12-inch cast-iron flue-pipes in two or more bends and returns, finally ending in the chimney-stack, will suffice.

Here also will be placed (if required) the special boiler for the low-pressure system of hot-water heating for the swimming-bath hall, and such other similar warming purpose as may be necessary.

Any odd corner of the basement will suffice for this stokery. Proximity to the chimney-stack will, however, save special flues for furnaces. The drying furnaces, if of fire-brick, will require little attention further than feeding with a sack of coke now and again. A coke-store, with shoot in a convenient position, will be required.

*The Engineer's Workshop.*—This should have a good screw-cutting lathe driven by steam, a steam drilling machine, a carpenter's bench, a blacksmith's forge and anvil, and a power grindstone. Shafting and belting should therefore be provided, with the requisite loose pulleys or other means of throwing the machinery in and out of gear. A store for materials, oil, &c., and a tool-closet should be provided. A light, ventilated position should be secured for this workshop.

In some establishments, in connection with the engineering department, rooms are provided for a

resident engineer. Where this provision is required the residence will probably be best located facing the side street where the entrance to the basement is placed.

*Electric Lighting.*—All new establishments will require this, and as some time must elapse before the light is so general that a current can be taken off a main in any part of London, and as it may not be supplied in a provincial town where the corporation may be building public baths, the architect will often be called upon to arrange a private installation. A complete installation will comprise a special high-speed steam-engine (a steam engine will be the most economical, as steam will always be at hand), a dynamo, and store for accumulators. The engine and dynamo should be placed in as spacious and roomy an apartment as possible, with neat, glazed brick walls, and lighted and ventilated from the open. The accumulators will be stored on shelves in a special store lined with glazed bricks, with a capacious ventilating shaft to carry off fumes during charging.

A small work-room for the electrician next to the dynamo-room might be found useful, and a room for stokers' use would often be a considerate provision for a very poorly-paid and hard-working class of men.



## CHAPTER IX.

## WATER SUPPLY.

UNDER this heading must be considered the supply of cold water to the slipper-baths and swimming-baths, hot water to slipper-baths, and the hot and cold water and steam supplies to laundries, together with all pipes and valves. We must also notice the steam supply to vapour-baths.

The heating of swimming-baths has been explained in a separate chapter.

The placing of pipes is a matter requiring in all baths great care and forethought. First, we must abandon the idea that pipes can be stowed away anywhere and anyhow. Every pipe should be in such a position as best facilitates inspection and repair. Proper subways with full head-room should be provided, with as much light as possible from areas continued below ground level. Every pipe should be properly carried on strong wrought or cast iron brackets on walls, or be strapped to the iron joists of the fireproof floors over the subways. Flanged and bolted joints are in all cases to be preferred. Steam pipes *must* be so jointed, and hot water pipes *should* be. The main steam tubes will be weldless drawn tubing of not less than  $\frac{9}{16}$  inch thickness

of metal. The hot and cold-water pipes will be cast iron of suitably heavy section. Expansion joints will be required for long lengths of steam tubing. Both steam and hot-water pipes are well placed on roller bearings.

A systematic manner of placing pipes in the subways should be followed—as, for example, steam in the centre, hot water on the left, and cold water on the right.

Two principles can be adopted in the supply of hot water to slipper-baths :—(1) There can be a hot-water tank connected with circulating pipes to boiler, and flow and return pipes from tank along subways under all slipper-baths ; and (2) the simple force of gravity of cold water from a cistern can replace water drawn off by the hot-water flow to baths.

It is urged as a point in favour of the circulating system that the circulation always ensures hot water at any point in the pipes. Practice, however, shows that there are no serious objections to the simpler arrangement—that without a return pipe. Many large public baths have had the latter system in operation for years without requiring alterations. Only in the morning is a little cold water sometimes found at the end of the system of hot-water supply pipes. This is quickly remedied by running off a little water.

The former system is practically the boiler and tank arrangement for domestic supply ; the latter is the boiler and cylinder arrangement, since the large boiler of the public bath-house represents and stands in place of both the cylinder and the saddle-boiler. In other words, the

household cylinder is simply an elongation, in a convenient form, of the kitchen boiler.

The non-circulating system is a great economy in outlay and in subsequent repairs. I shall therefore proceed to describe it in conjunction with the cold water supply.

The cold water must be brought in from the water company's main through, say, an 8-inch pipe, with meter and screw-down stop-valve. The cold supply to slipper-baths, to swimming-baths, and to wash-house can be arranged directly off the company's main by branches from the 8-inch pipe—say 6-inch to swimming-baths, 4-inch, 3-inch, or 2-inch for mains in subways under slipper-baths, according to the number of baths to be supplied, and  $1\frac{1}{2}$ -inch and  $1\frac{1}{4}$ -inch branches to bath-valves; 3-inch and 2-inch mains to wash-house and laundry, according to the amount of work to be done; and 1-inch and  $\frac{3}{4}$ -inch pipes to showers, lavatories, &c.

In order to supply a constant and even pressure to the boilers, the medium of a cold water cistern holding, say, some 15,000 gallons will be necessary, the cistern to be supplied from a branch from the main cold supply pipe.

A 6-inch pipe will be taken from the cistern to the cold water supply connections to boilers, the pipes, flattened and broadened as may be necessary, being carried through between the centre flues of the boilers to, say, 6 inches off the bottom, and the nozzles bent round so as to discharge water horizontally in the line of the axis of the boiler. By so doing, the incoming cold water is directed along the line of the lower flue

which receives the combined heat of the two furnaces, circulation being further caused in the boiler.\*

When any hot water is drawn off for the baths, &c., the cold water from cistern instantly replaces the loss in the boiler.

A 6-inch main hot-water supply-pipe will connect with the boilers, and the branches to baths, laundries, &c., will be of the same size as for cold supplies.

The boilers and the whole of the steam pipes should be "lagged," or well coated with an approved non-conducting composition or packing. Valves are now made with renewable seatings, and these will be found an economy.

To each compartment in the public wash-house there must be provided a cold supply, a hot supply, and steam for boiling. Movable nozzles on the side divisions will direct the supply either to the boiling or the washing-tubs. As only a low pressure of steam is required in the laundry a special pressure-reducing valve is sometimes employed on the main steam-supply pipe to wash-house.

Hot and cold water and steam supplies are also required in the establishment laundry.

The vapour-baths would be best supplied off a branch from main steam pipe to the laundry, so that the pressure may be low. If this is not convenient, a special pressure-reducing valve should be fixed. A  $\frac{3}{4}$ -inch pipe to each vapour-box will suffice. In order to ensure a

\* In Cornish boilers good results have been obtained with the feed—on this system of supply—entering at the furnace end of boiler about one-third of the whole diameter of shell from bottom of boiler.

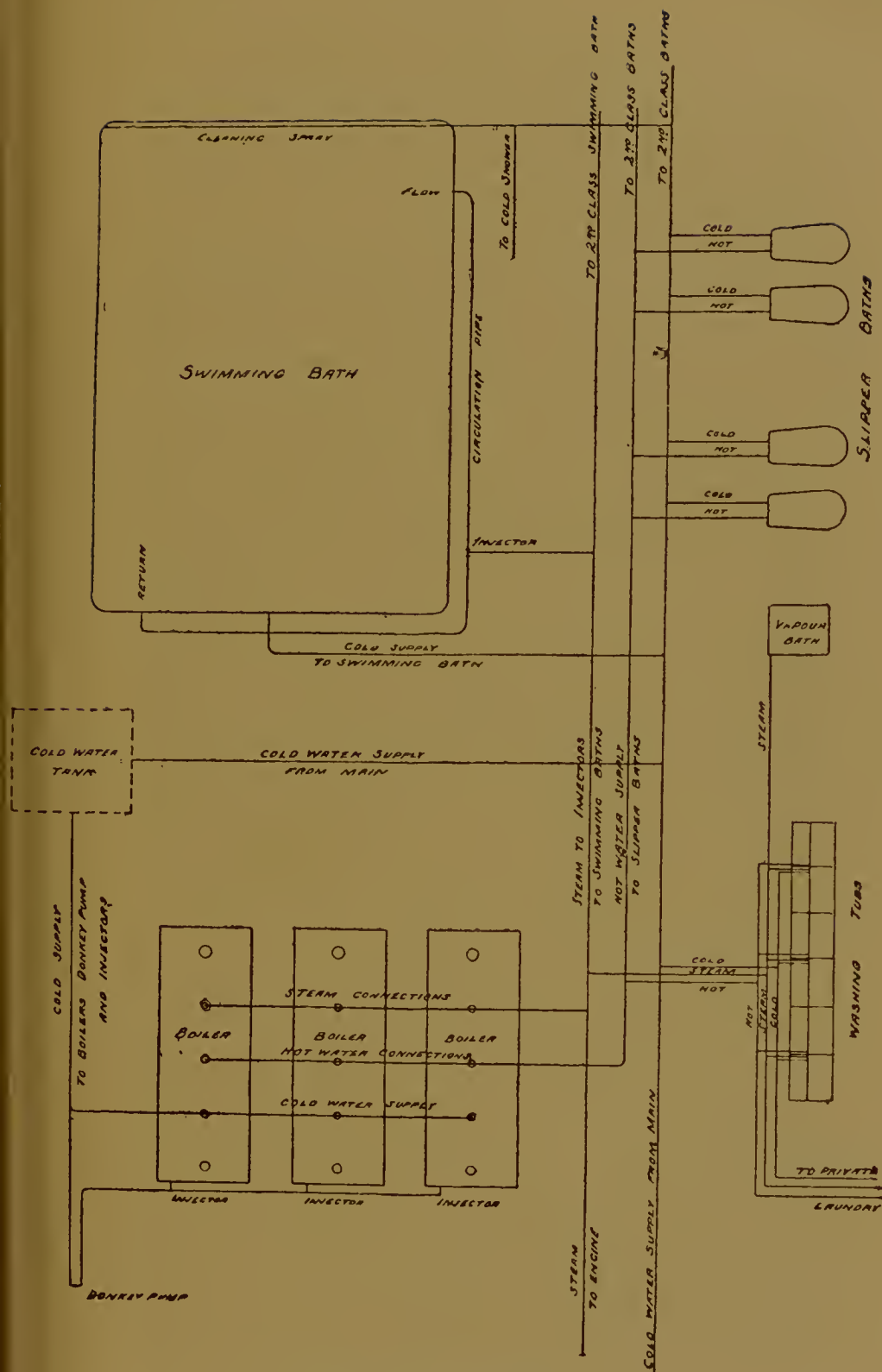


DIAGRAM OF WATER SUPPLY.

comparatively noiseless escape of steam, a length of pipe of about 3 feet in the vapour-box should be perforated with holes as outlets.

The vapour-boxes must be placed in douche rooms. Some fittings will be required, to which 1-inch branches from main should be brought. The fittings may include one or more of those described in Chapter VI. of 'The Hydropathic Establishment and its Baths,' and illustrated in Chapter VI. of 'The Turkish Bath: its Design and Construction.' The most practical and useful fitting in a douche-room—especially such as that in public baths—is a large adjustable horizontal spray, with a length of flexible hose-pipe connected with hot and cold supplies, and having a large copper bell with gun-metal rose. The needle-bath and other appliances, suitable for invalids and in luxurious baths, are out of place in the establishments erected under the provisions of the Baths and Wash-houses Act. The vapour-box and the adjustable horizontal spray supply all the requirements of a complete "partial" vapour-bath.

The cold showers to swimming-baths will require  $\frac{3}{4}$ -inch supply-pipes off the cold main.

Over two or three of the slipper-baths a cold shower will be required, which may be either permanently supplied with water or consist of a small reservoir with handle and chain;  $\frac{3}{4}$ -inch supply-pipes will be required.

It is desirable to form a cleansing-spray at the shallow end of a swimming-bath, in order that there may be a gentle flow of water down the bath when emptied for cleaning. The galvanised-iron safety-rail, 2 inches diameter, round the bath can, at the shallow end, be



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transformed into a spray by a series of perforations on the under side of the pipe, with a stop-cock in proper position.

If there be a soap-hole or foot-bath to the second-class swimming-bath, it will require  $\frac{3}{4}$ -inch hot and cold supplies.

The lavatory supplies and the water supply to superintendent's residence need not be detailed, being ordinary every-day arrangements familiar to all.

When hard chalk-water is supplied to bathing establishments some form of water-softening apparatus will be desirable, to prevent calcareous incrustations in boilers, pipes, &c.

The pipe diameters given in this chapter are internal measurements calculated for a large bath-house. For smaller establishments the sizes of pipes will have to be suitably proportioned to the work to be done.

## CHAPTER X.

## THE HEATING OF SWIMMING BATHS.

THE desiderata in warming the water in swimming-baths are economy, speedy action, simplicity and the prevention of what is termed "patchiness," viz. patches of warm and cold water here and there in the bath.

There are many and varied systems of patentees and others. It has not been my intention to enter into any analytical description of these, or to weigh their relative merits, but to describe those methods of warming by hot water and steam that recommend themselves by their simplicity, and have stood the test of practical trial.

The water in swimming-baths may be warmed :

1. By the addition of fresh hot water.
2. By circulation through a boiler.
3. By live steam.
4. By circulation with steam injectors.

1. Freshly heated water from a boiler is turned into the bath in the same way that hot water would be turned into a slipper-bath. The superfluous water overflows into the drain. Under this system of heating a certain amount of patchiness results, the cold water and fresh hot water not being effectively mixed. The

system also requires fresh supplies of water in order to warm the bath. Several of the older-established baths in London and a few modern ones have swimming-baths warmed in this way. It has the recommendation of simplicity and the fact that clean fresh water is supplied. See Fig. 1 in the diagram on p. 74.

In carrying out this principle there should be, say, a 6-inch supply-pipe from boiler to bath, with stop-valves next to boiler and bath. Duplicate valves on this plan should always be fixed, as they enable repairs to be made to a length of supply-pipe without emptying the bath. The junction of the supply-pipe and bath should be such that the injection of the water shall tend to cause a circulation in the bath, so that the water may be as thoroughly mixed as possible.

2. Instead of turning freshly heated water into the bath, the water in the bath is made to circulate between the bath and the boiler. Flow and return pipes from, say, 6 inches to 8 inches in diameter, are arranged between the bath and boiler. The flow from the boiler joins the bath at the shallow end, and the return to boiler at the lowest level of the deep end. In order to save making more holes than absolutely necessary in the bath the return outlet may also form the waste, stop-valves being fixed as required for the purpose. (See Fig. 2.)

This system is very generally employed in the older London establishments. A Cornish boiler is provided, and the water in the swimming-bath circulates through the boiler till the required temperature is maintained. In this way no fresh supply of water is

required to raise the temperature of the bath. In order that there may be a proper circulation, the boiler must be placed at a sufficiently low level below the swimming-bath. The flow from the boiler and the return thereto will be arranged as ordinarily, viz. at the top and bottom of boiler respectively. Stop-valves should be placed at both ends of the circulation pipes, for reasons above stated. Packing is scarcely necessary for these pipes.

3. Live steam is blown into the bath or into a water-chamber adjoining the bath. This is a noisy method, uncertain in action, and is not preventive of "patchiness." (Fig. 3.)

4. This is an improvement on and development of the preceding, and the system of steam-heating most to be recommended. On this system live steam raises the temperature of the water, but a definite circulation is arranged. The steam meeting the water in a pipe, noise is very greatly reduced, and if there be a long length of pipe between the point at which the steam comes in contact with the water and the inlet to the bath, the heating can be put in action whilst the bath is in use, without the danger of scalding bathers that attends the blowing of live steam direct into the bath. The water, being blown forward by the steam, flows briskly into the bath, and ensures almost completely against patchiness. (See Figs. 4, 5 and 6.)

In this system steam injectors of special design and construction are required. A 4-inch, 6-inch, or 8-inch circulating pipe—according to the water capacity of the bath and the size of boiler—must be arranged. The

injector must be suited to the size of the circulation pipe, and connected with a steam supply-pipe. On opening the valve of the injector, the rush of steam causes a flow of water on the same principle as in an ordinary steam-boiler injector, the temperature of the water being raised so many degrees according to the diameter of the circulation pipe, the pressure maintained in the boiler, and the care with which the main steam tubes have been fitted and packed with non-conducting material. There will then be a circulation in the bath which will mix the water, and tend greatly to prevent the formation of those patches of hot and cold water so unpleasant to swimmers.

To properly carry out this system of heating swimming-baths in a large establishment powerful boilers will be required. Lancashire boilers should be used. If three such boilers are provided when there is much work to be done, as, for example, raising a volume of water from its normal temperature to  $72^{\circ}$  in the shortest possible time, the third auxiliary boiler could be put under steam in addition to that ordinarily at work. For every-day duty, such as the restoring of the few degrees of heat in the water in swimming-baths lost during the night, one boiler would suffice for three large swimming-baths.

In place of a single injector two or more can be arranged to each swimming-bath ; but unless the boiler power is proportionately increased nothing will be gained thereby. Given a sufficient supply of steam, however, the heating will be more expeditious.

In deciding the relative merits of the above systems

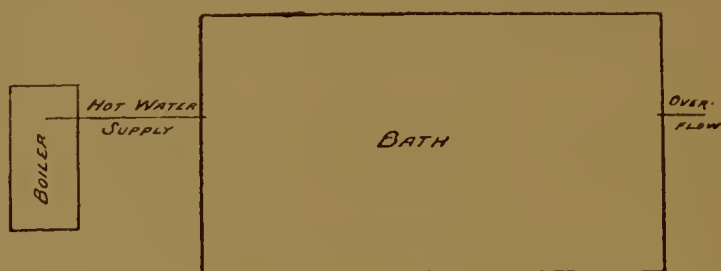


FIG. 1.

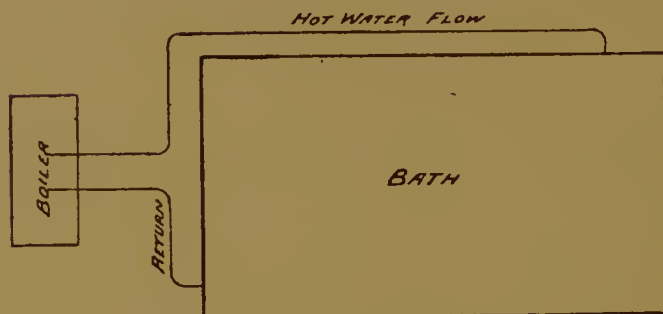


FIG. 2.

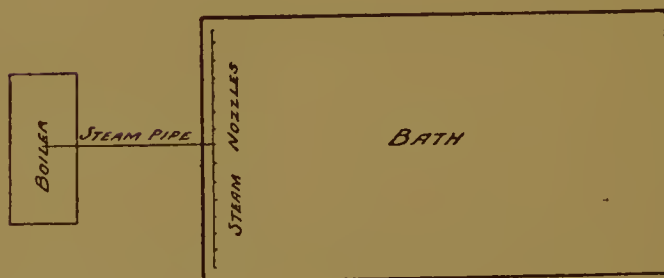


FIG. 3.

DIAGRAMS OF DIFFERENT METHODS OF HEATING THE WATER  
IN SWIMMING-BATHS.



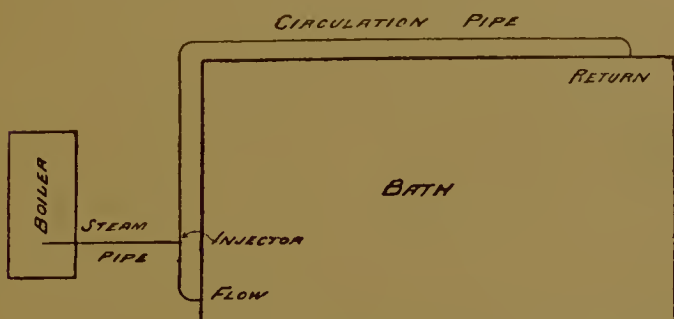


FIG. 4.

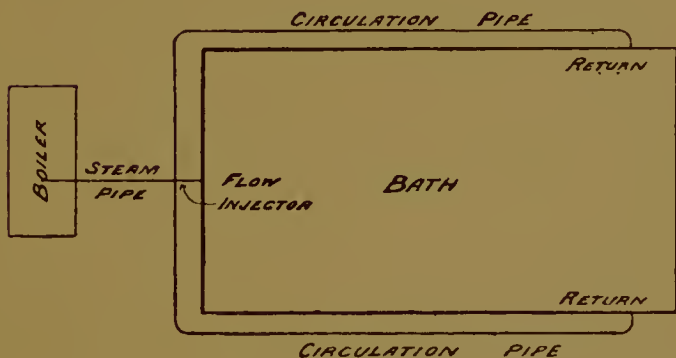


FIG. 5.

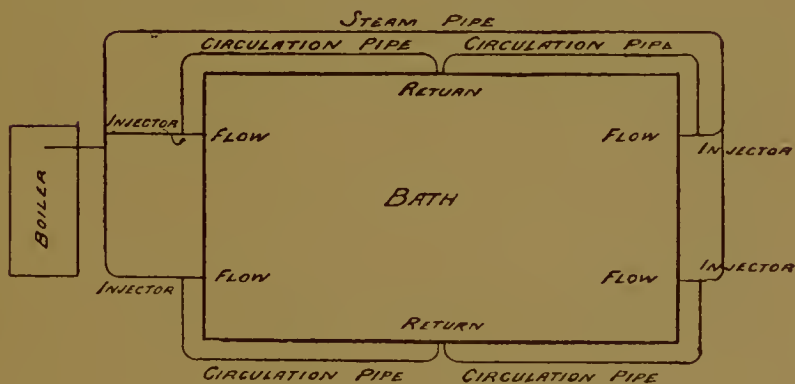


FIG. 6.

DIAGRAMS OF DIFFERENT METHODS OF HEATING THE WATER  
IN SWIMMING-BATHS.

of heating, the nature of the work to be done, the size of the establishment, and the kind and dimensions of the boilers to be employed must be taken into account.

For small establishments, where only two Cornish boilers are to be fixed, either systems 1 or 2 should be employed. No. 2 is more economical of water, but is not so ready as 1, unless a special boiler is kept for the purpose of circulation; for if there be one boiler for hot water and one for steam, during the day the former must be employed for the slipper-bath, supply, &c., so that the circulation can only be put in action during the night, as, of course, it would be an uncleanly arrangement to supply water to private baths from a boiler circulating the water from the swimming-bath. No. 1 therefore, on the whole, is to be recommended for small establishments.

No. 3 is crude and objectionable. No. 4 is the best system for large establishments where several hundred thousand gallons of water have to be dealt with daily. In a bath of 150,000 gallons, practically the exact contents of a swimming-bath 120 feet by 40 feet, with a depth of water varying from 3 feet 6 inches to 6 feet 6 inches (a common size nowadays for first-class swimming-baths), it would be a tedious and lengthy operation to warm the bath by the supply of freshly heated water.

It is, however, useful to provide, in addition to the systems of injectors, a direct supply of hot water from the boilers to the swimming-baths, as by this means, when the baths have been emptied for cleaning or repairs, hot water can be turned in with the cold, and thus time—often a matter of great urgency in public

bathing establishments—will be saved in the operation of filling and heating the bath. The inlet to the bath should be the same as that for the cold-water supply, a junction being effected between the two services in a convenient position just outside the retaining wall of the bath.

Figs. 4, 5 and 6 show various methods of arranging injectors and circulation pipes. Providing that the boiler power is of equally increased efficiency, they will represent the positive, comparative and superlative in respect to power of heating. Fig. 4 shows an arrangement with one injector only, and is suited to a small bath. Fig. 5 shows one powerful injector and two return-pipes to the circulating system. The arrangement is suited to a bigger bath. Fig. 6 demands a great deal of steam to make it, in reality, more effective than the simpler arrangement with a single injector. If, however, the steam supply be in proportion, it becomes a powerful and effective system, and preventive of patchiness of water. The objection to the plan is the large number of holes with gratings required in the bath. These should always be as few as possible.

## CHAPTER XI.

THE TURKISH BATH IN PUBLIC BATHING  
ESTABLISHMENTS.

THE accommodation required by Baths Commissioners remains a fixed quantity year by year. Improvements take place not in the character of the accommodation afforded but in the matter of details, such as the fittings of baths, the heating arrangements, &c. In the foregoing chapters I have endeavoured to point out the most perfected methods of arranging the accommodation in accordance with the fixed schedules of the Act. It now remains to consider in what way the public bath-house could be improved in respect to the *nature* of the accommodation provided.

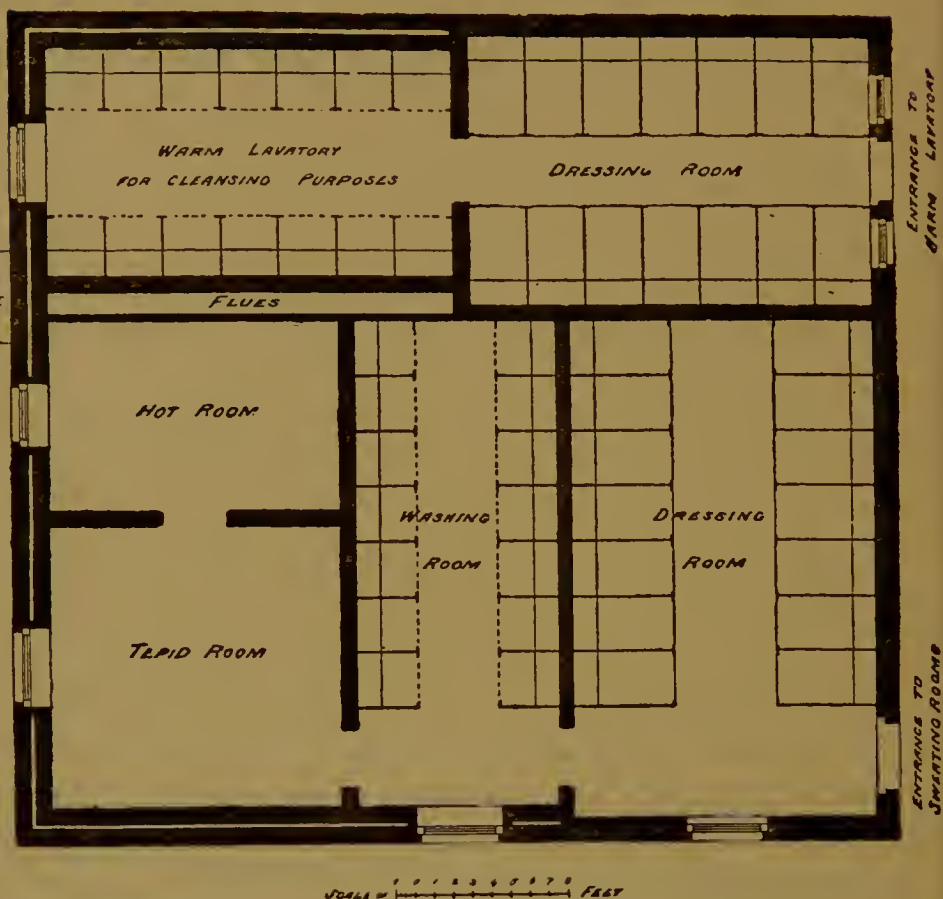
In preparing a scheme for the inauguration of a new bathing establishment, Baths Commissioners appear to make wonderfully little use of their own brains. First, it is to be presumed, the Act and its amendments are studied, and, as soon as possible after the appointment of the Commissioners, a deputation is formed for the purpose of visiting and inspecting such buildings already erected as may afford an example of the particular accommodation required. Notes being taken as to the various arrangements, the Commissioners prepare a

scheme, the basis of which will be the ideas derived from a study of the buildings visited, while any tendency to innovations is checked by the clauses of the Act.

To a certain extent, therefore, improvements in the arrangements of public bath-houses are impossible without further amendments of the Act. Commissioners, moreover, seem naturally timid and shy of novelty and innovation. They hesitate to employ new methods, preferring the safe course of pursuing a beaten track. Past experiences, however, have shown that attempts to exhibit progress and the adoption of new ideas would not necessarily bring upon Commissioners the censure of higher authorities. This is certainly the case with regard to the provision of the hot-air bath in public baths. In Chapter I. I referred to the position of the Turkish bath with relation to the Public Baths and Wash-houses Act, and pointed out that at the time of the passing of the original Act the vapour-bath was in greater repute than the Turkish bath. As a consequence the vapour-bath was adopted in preference to the hot-air bath. If a committee of experts were to-day rearranging the whole matter of legislation relative to public baths the latter would certainly be included. I have before alluded to an incident in connection with the building of the Paddington Baths, where an application being made by Mr. Richard Metcalfe to the Local Government Board as to the legality of providing Turkish baths in public bath-houses, the reply received was to the effect that as the schedule to the statutes 10 and 11 Vic.

cap. 61 recognises a vapour-bath, "the Board therefore apprehend that there would be no legal objection to the establishment of a Turkish bath."

Since this letter was indited, in the year 1873, some



PLAN OF A TURKISH BATH AND WARMED LAVATORIES FOR  
PUBLIC BATHS.

little has been attempted in the way of providing such baths. One of the most suitable Turkish baths for a public bath-house is that in the Stockport Corporation Baths. The problem of supplying the bath at a sufficiently low price has been a great difficulty. If much



were in the future attempted in this way, success might follow the adoption of the plan of doing away with shampooing and the substitution of a lavatory divided into compartments, so that each bather could perform his own ablutions. The lower suite of rooms in the accompanying plan represents a Turkish bath so arranged. It is reproduced from an illustration in Mr. Richard Metcalfe's '*Sanitas Sanitatum et Omnia Sanitas*,' a work that should be studied by all interested in the matter of providing the hot-air bath in public baths. The plan also shows, in the upper suite of rooms, a suggestion for a system of washing in warmed lavatories in compartments fitted with a seat and a basin, and hot and cold taps, which, it is said, would be more congenial to bathers in cold weather, and be a saving in hot water and attendance. The same principle is shown in the washing-room of the hot-air bath, which is similarly divided into compartments fitted with seat, basin, and hot and cold taps.

On this principle there should be no difficulty in supplying a hot-air bath for a small sum. The saving by reason of the abolition of the shampooing process would be very great. Still, the necessity for small charges would render it important to study every economy in the building and fitting of such baths. There will be no necessity to enter into the question of the arrangement of the Turkish baths themselves, that subject having been fully treated in a former work. I have, however, here brought forward the question in the hope that it may some day receive more attention from Commissioners. The economics of both this and the scheme

for washing in warmed lavatories in lieu of slipper-baths are rather extensive, and would be out of place in these pages, but in 'Sanitas' the reader will find that the subject has been treated exhaustively.

The matter of warm lavatories in place of slipper-baths would be well worth the attention of Commissioners in many districts. Without a trial of the system, however, it would be difficult to say how bathers would take to the idea. The Englishman is inured to his slipper-bath and to a complete immersion in hot water. This is comfortable enough so far as it goes, but in cold weather it is not pleasant to step out again into the cold bath-room. The argument advanced is that the lavatories being warmed to a temperature comfortable to the unclothed body, bathers would resort to such baths in winter where they now—as compared with warmer months—attend the slipper-baths in lessened numbers. The cost, as compared with bathing in slipper-baths, would, it is said, be less, a saving being possible in both attendance and in water.

It is a certain and noteworthy fact that the attendance of bathers at public bathing establishments does fall off as winter approaches. If the introduction of a cheap form of hot-air bath and a method of warm water bathing—which would be as attractive in winter as the slipper-bath system is comfortless—would prevent this neglect of bathing in the winter months, a great thing would be accomplished.

## CHAPTER XII.

## BATHS FOR THE POOR.

IN attacking the problem of further cheapening baths for the very poor, I take it for granted that such cheapening would be in every way desirable. To vast numbers of those persons comprising the closely packed populations of our large cities even the sum of twopence is a matter for consideration. It will not do to argue that any man will find this sum for a pot of beer and should therefore be able to afford a regular twopenny hot bath. The ignorant must be raised up by the help of the enlightened, and every inducement held out to the poor to practice regular bathing habits. This is not mere philanthropy. To promote cleanliness among the masses is to promote the health, wealth, and happiness of all classes of the community. No great amount of argument would be required to prove the truth of this assertion.

Are the poor attracted or repelled by the buildings erected by the various Baths Commissioners? Could a warm bath be provided for one penny instead of twopence as heretofore? Here are vital questions.

First, are the poor encouraged to attend? I doubt if the arrangements made are always such as tend to this

desirable end. The very elaborateness of some of our London public baths often acts as a detriment to attendance. Poor people are not infrequently shy of coming into contact with those in more fortunate circumstances. Some years ago a superintendent of one of the large public baths in a poor district of the Metropolis drew my attention to this point, and said that in his experience many poor persons would not attend the baths where there were pretentious entrances, but that such would gladly enter an unobtrusive side entrance for third-class bathers. This indisputable fact should surely have some weight in deciding the yet open question of the best arrangement of entrances to public baths. When one calls to mind the elaborate pretensions of some of the London baths—their marble floors, tiled walls, and carved woodwork—it does not seem surprising that many poor persons shrink from contrasting their wretchedness with this display of wealth and the wealthy bathers they would naturally imagine that they would meet in such palatial entrance-halls. The most common arrangement of entrances, and that most generally accepted as the best, is to provide one pay-office, with men's and women's entrances on either side of this, first and second-class bathers entering at the same doors. By this arrangement one clerk can serve tickets to the whole of the bathers, both male and female, and cost of attendance is reduced. So far so good; but if the plan tends to discourage the attendance of poor persons, is it a good one, or one in harmony with the ultimate object of an Act to encourage bathing among the poorer classes? I do not

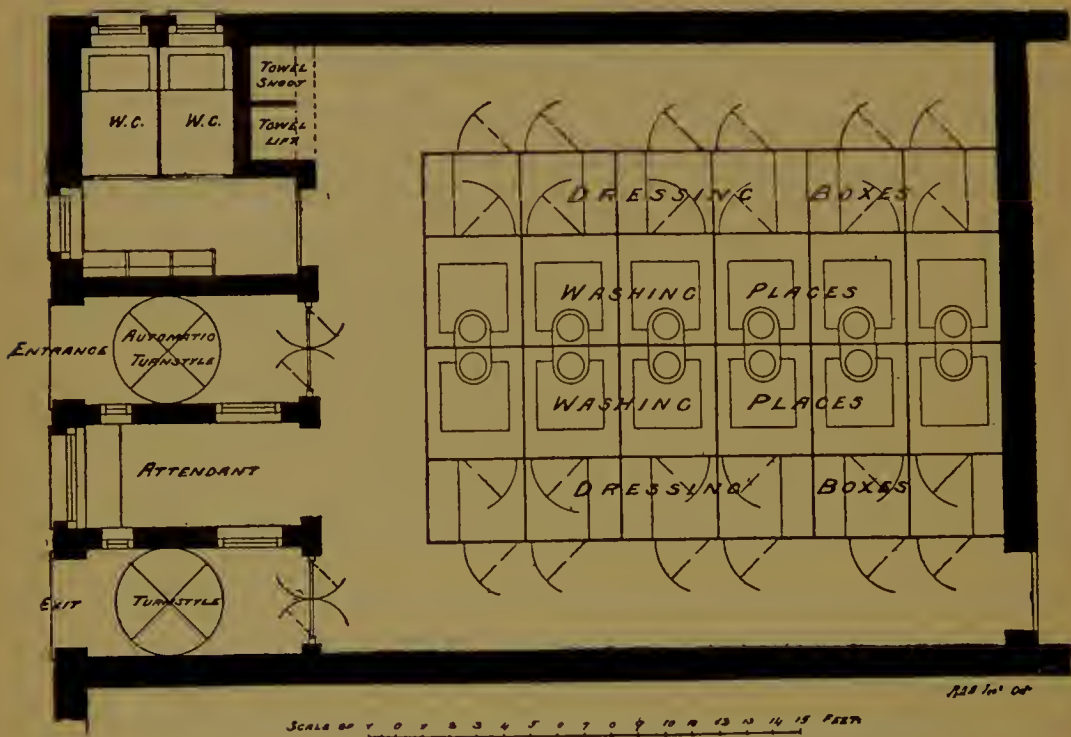
say that it is not ; but the point having been raised by an experienced baths superintendent, I give it place here as another question to be considered by future Baths Commissioners who may put themselves to some trouble in looking for possible improvements in plan, &c., and not merely—as so often done—blindly copy the arrangements and accommodation at some existing establishment.

Could a warm bath be provided for one penny ? Hitherto, I believe, the cheapest warm bath has been given for the sum of twopence—the maximum amount fixed by the Baths and Wash-houses Act ; but no clause in the Act or any of its amendments prevents Commissioners from supplying a penny warm bath if so it seems desirable. A working man—presumably, from his letter—once wrote to me complaining that twopence was an item for a bath to many thousands of persons, and he suggested that warm shower-baths should be supplied on the “penny-in-the-slot” principle. The idea may seem crude, but it has this much that is practical—that anything that will tend to reduce cost of attendance will cheapen bathing. The use of automatic machinery for supplying a fixed amount of water, and the adoption of Mr. Metcalfe’s warmed lavatory system would certainly reduce the cost of warm baths. Under the present system of slipper-baths some 50 gallons of water is required for each bath, where 20 gallons or less would suffice under the warmed lavatory system.

It might at least be worth the while of newly appointed Commissioners to try by these means to supply a warm bath to the poor for one penny, soap, of course,



being charged extra, or brought by the bathers. The space required for two sets of baths of this kind would be but small, and if the scheme were unsuccessful, it could be utilised for ordinary slipper-baths or for other desirable purposes. Possibly a better arrangement than putting a coin into a machine to control the



PLAN OF ARRANGEMENT FOR SUPPLYING CHEAP WARM BATHS.

supply of water would be an automatic turnstile placed at the entrance to the penny baths. All that would be required would be compartments for undressing and washing, as in the plan given in the last chapter; or better, perhaps, as in the accompanying illustration, whereby an advantage would accrue from combining the dressing and bathing compartments, plumbing



would be simplified, and expense saved by keeping the bathing compartments back to back. A space of 3 feet 6 inches by 7 feet or 7 feet 6 inches would be all that would be required for each division ; thus nearly twice as many bathing-divisions could be provided under this system as in the method of slipper-bath bathing where each bath-room requires a space of at least 6 feet square. Here would be a great saving in floor-space. The divisions would be of slate or enamelled slate. The door between dressing-place and bath could be arranged as in the plan, so that when closed against the seat and clothes it would effectually shield the latter from splashing. The floor of the bathing-place would be sunk 9 inches or so to form a foot-bath, and a basin would be placed at the side or at the end, as shown. Hot and cold supplies would be fitted to the basin, either controlled by the attendant, or, to save time, regulated by the bathers, the amount of water supplied being strictly limited. Above would be a simple cold shower consisting of reservoir and rose with a handle and chain, each bather being limited to one charge of the reservoir.

The advantages of this system will be seen to be a saving in ground space and in water, besides a great saving in attendance and the saving of a special pay-office clerk. The system of bathing would be found attractive in cold weather when the chilly air of the ordinary slipper bath-room repels bathers. I see no reason why this method of washing oneself should not commend itself to bathers. Past generations have imagined that to effectively cleanse the body one must soak like a potato in a complete immersion of hot

water ; but bathers would quickly appreciate the comfort of a warmed lavatory where they could leisurely scrub themselves, especially if they could further save half the cost of the ordinary bath. The warm slipper-bath may be luxurious, and doubtless to badly-fed and clothed persons it is especially so ; but we know that in cold weather there is always the temptation to enjoy the luxury of lying in the water rather than to rub and scrub oneself, and the subsequent shivering dressing operation and passage into the cold winter air without a toning cold shower-bath is fraught thereby with more injurious effects to susceptible constitutions. In the suggested warmed lavatory system a cold shower would be supplied for the same charge of one penny.

To those who should prefer it, there would be the ordinary warm slipper-bath at the charge of twopence. In some ways more luxurious, it is but fair that an increased charge should be made for this bath. It is, of course, difficult to say exactly what would be the result of the adoption of this novel system of bathing. One can only suggest the idea. It is for Baths Commissioners to inquire into the matter, and, if they deem it practical, to put it into shape, and to take the risks of introducing a novelty. Certain gains seem assured :—(1) The cheapening of warm baths ; (2) The encouragement of necessary cleanliness in cold as well as warm weather ; and (3) The prevention of cold-catching as a frequent result of incautious hot-water bathing during the winter months.

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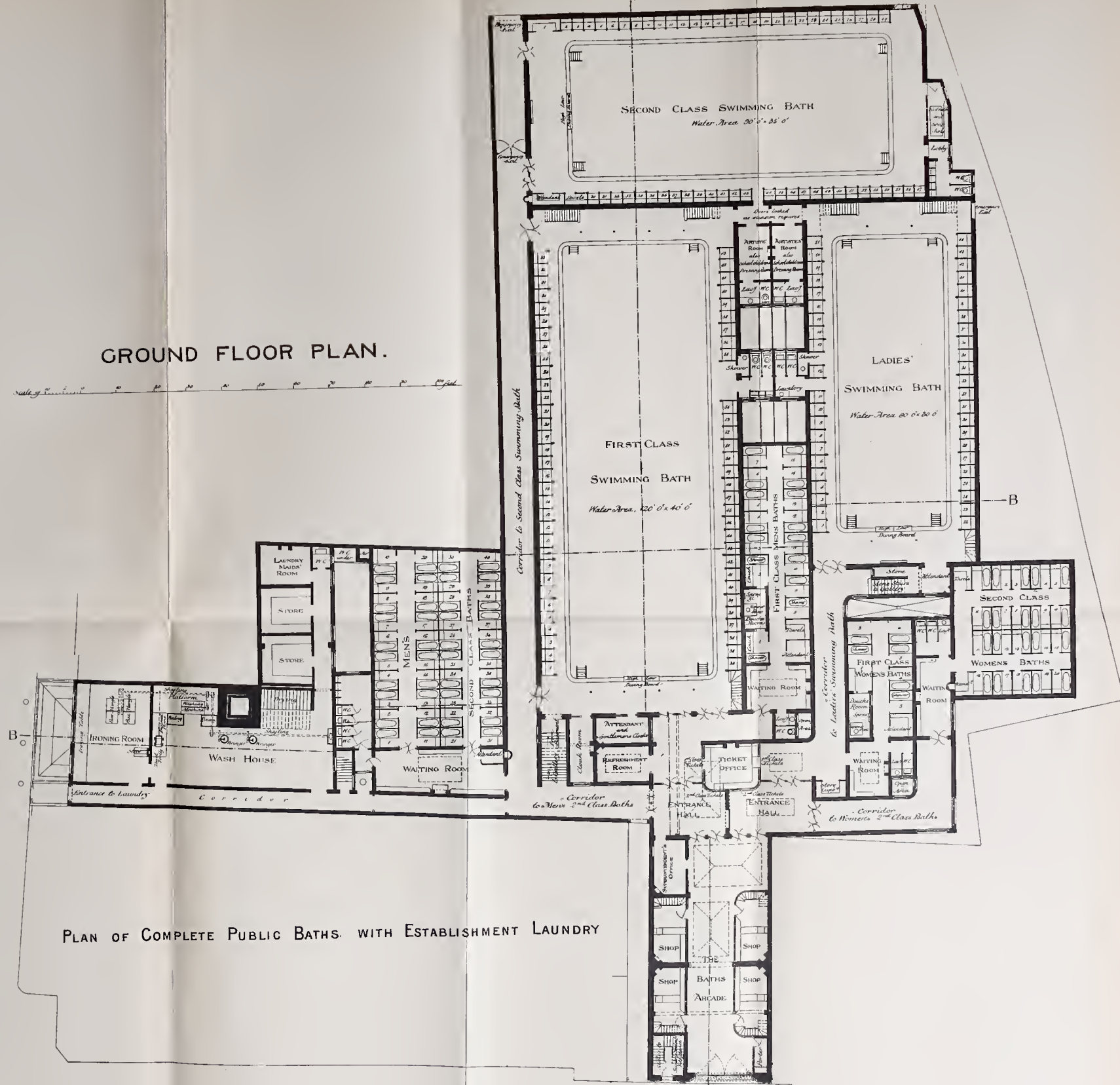
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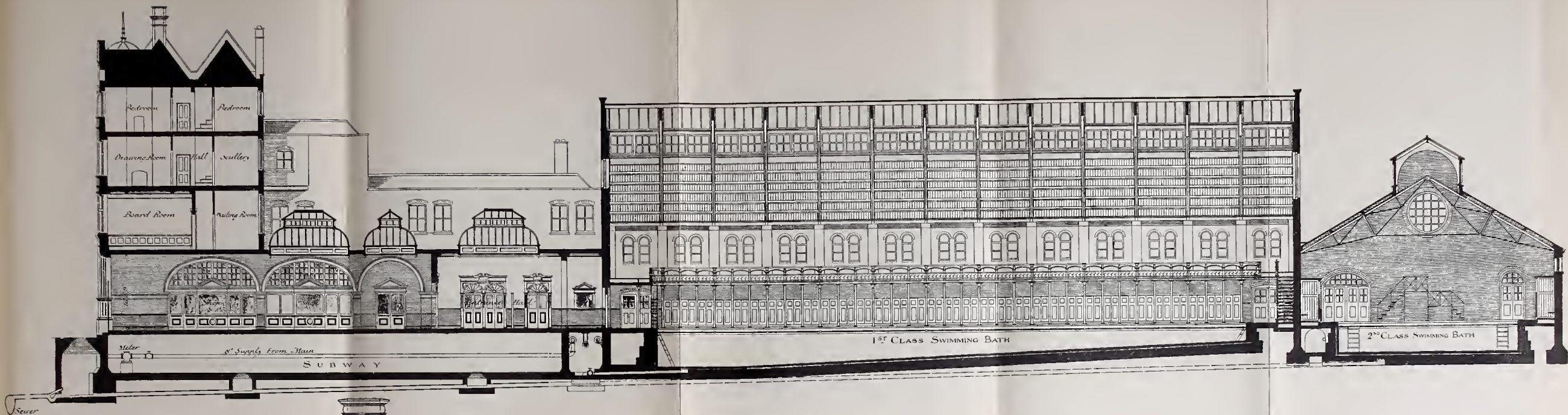
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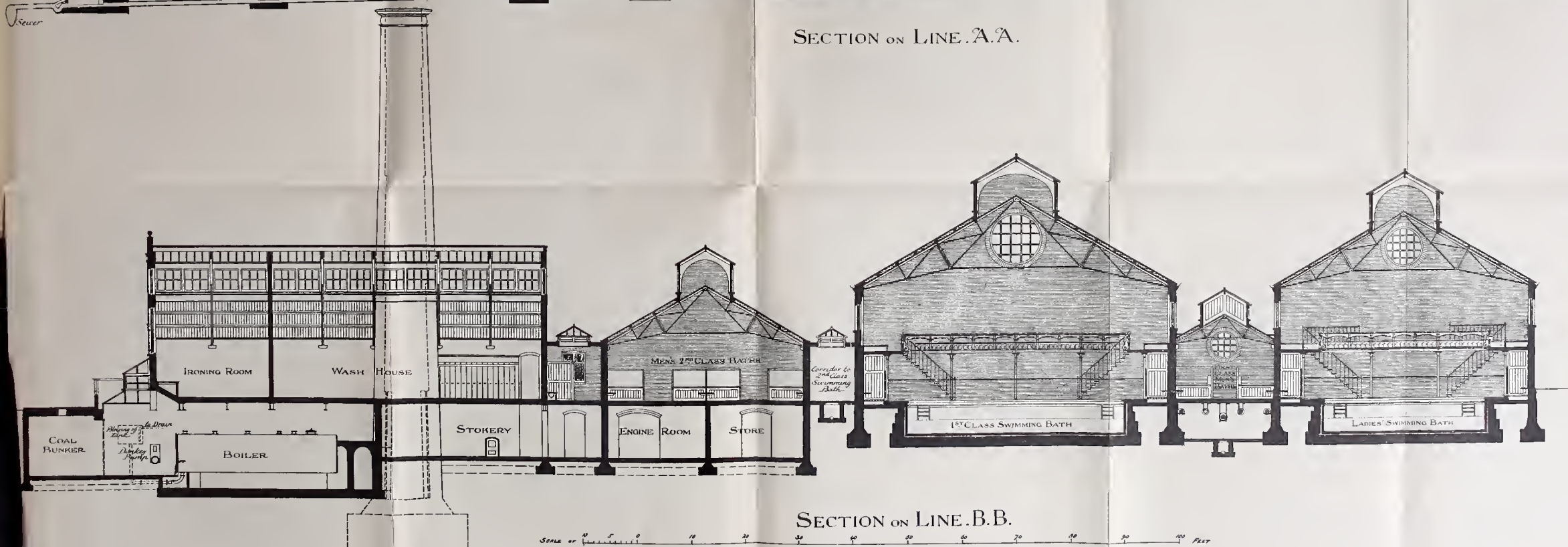
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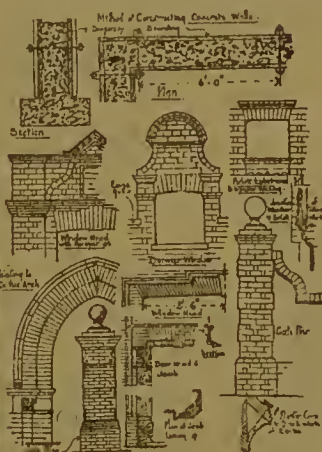
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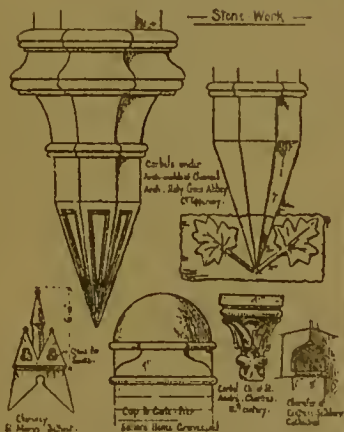


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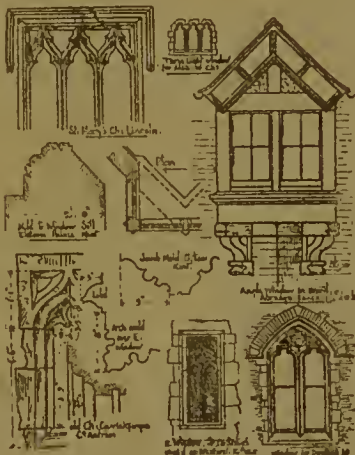
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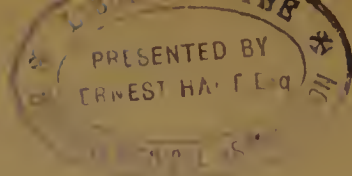
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